# THE AUK:

## A QUARTERLY JOURNAL OF

## ORNITHOLOGY.

VOL. X. JULY, 1893. NO. 3.


## A HYBRID SPARROW (*ZONOTRICHIA ALBICOLLIS* + *JUNCO HYEMALIS*).


BY WITMER STONE.


THE rarity of hybrid birds in a state of nature and the great interest which they possess, not only for ornithologists, but also for naturalists in general, renders it desirable that such hybrid specimens as have been secured should be well described and figured. With this object in view the Editors of 'The Auk' have had the accompanying plate prepared, illustrating the hitherto unfigured hybrid between the White-throated Sparrow and Slate-colored Junco. The original painting from which the plate was made is the work of Mr. Ernest E. Thompson, who is well known for his many beautiful illustrations of bird life. The bird here represented was secured by Mr. William L. Baily near Haverford College, in Montgomery County, Pennsylvania, on December 12, 1882, and was first described in the Bulletin of the Nuttall Ornithological Club, Vol. VIII, p. 78, by Mr. Charles H. Townsend.

Mr. Baily has recently had the specimen mounted, and has presented it to the Academy of Natural Sciences of Philadelphia, where it is now exhibited in the collection of local birds which is being formed for the museum by the Delaware Valley Ornithological Club.

This bird, which is a male, combines the characters of *Zonotrichia albicollis* and *Junco hyemalis* in nearly equal proportions. The upper surface and wings have the general aspect of the *Zonotrichia*, but the black shaft stripes are narrower and the rufous is more or less suffused with slaty, this shade predominating on the head, where the central white stripe is entirely obliterated and the black stripes considerably broken. Beneath the pattern of coloration is that of the *Zonotrichia*, but the breast and sides are of a darker slaty hue. The superciliary stripe is reduced to a white spot behind the nostril and there is a faint dusky maxillary stripe. The outermost tail feathers have the terminal two thirds white, and there is a white terminal spot on the inner web of the next pair.

## DESCRIPTION OF A NEW HUMMINGBIRD FROM NORTHERN MEXICO.

BY WILLIAM BREWSTER.

Among the birds collected for me in Sonora, Mexico, in 1887, by the late Mr. J. C. Cahoon, is a Hummingbird which I was unable to identify until, during a visit to England in 1891, I showed it to Mr. Salvin who at once pronounced it to be a new species. It may be characterized as follows:—

### **Cyanomyia salvini.**[1] SALVIN'S HUMMINGBIRD.

*Specific characters.*—Similar to *C. cyaneicollis*, but smaller, with shorter wings, shorter and squarer tail, but longer and slenderer bill; iridescent colors on sides of neck bordering the throat, blue like the crown

[1] To Osbert Salvin, Esq.

instead of greenish; very much more green on sides of breast and body, the white of the under parts, especially of the throat and jugulum, being confined to a narrow central space; upper mandible light reddish at the base instead of black as in *cyaneicollis*.

*Type*, ♂ *adult* (No. 24,125, collection of William Brewster, Nacosari, Sonora, Mexico, March 31, 1887, J. C. Cahoon): Top and sides of head, with sides of neck, glittering blue; remainder of upper parts rather dull, dark, but shining green, somewhat obscured by drab on the rump and upper tail-coverts; shoulders and wing-coverts green like the back but all the quills dark hair brown with a faint gloss of purplish; tail dark glossy green, the outer pair of feathers broadly tipped with drab; under parts soiled white, the middle of the throat tinged with clayey buff (a stain, probably), the feathers along its sides with large, crescent-shaped, subterminal spots of blue; sides of the breast greenish blue; sides of the body brilliant green; bill (in the dried specimen) dull reddish brown or brownish orange, lightest at the base, deepening to horn color at the tip. Wing, 2.07 inches; tail, 1.27; length of culmen from base, 1.02; from feathers, .88; width of bill at base, .13.

I have compared this specimen — which as far as known is unique — with six Peruvian examples (including the type) of *cyaneicollis* in the collection of the British Museum. Although in general coloring it bears a closer resemblance to this species than to any other of the genus, Mr. Salvin is of the opinion that its true relationship is with *C. quadricolor* (= *C. ellioti* Berl). From the latter, however, as well as from *C. violiceps*, it differs very decidedly in the brighter green of the neck and back, in the blue instead of purplish reflections on the crown, and in the blue or greenish on the sides of the neck and body. It is smaller than *C. cyanocephala*, with a shorter tail, and white instead of gray under tail-coverts.

---

## DESCRIPTION OF A NEW MARSH WREN, WITH CRITICAL NOTES ON *CISTOTHORUS MARIANÆ* SCOTT.

BY WILLIAM BREWSTER.

IN 1888 Mr. W. W. Worthington sent me some odd-looking Marsh Wrens from Sapelo Island, Georgia. They were evidently not *C. palustris*, and as they agreed in several respects with Mr.

Scott's description of *C. marianæ* I referred them[1] to the latter without much hesitation, attributing certain peculiarities which they exhibited to individual variation.

At the time I had only two specimens of *marianæ*. There are now before me forty, of which five, including the types, have been kindly loaned by Mr. Allen from the collection of the American Museum, while one has been supplied by Mr. Manly Hardy, the remaining thirty-four being contained in my own collection. Of the total number, two were taken at Cedar Keys and thirty-eight at Tarpon Springs, Florida. Of the supposed *marianæ* from our south Atlantic coast I have now ten specimens (a list of which will be given later) and of *C. palustris* no less than eighty-six skins, including many winter specimens from our Southern States and illustrating certainly all the seasonal, and probably most of the individual and geographical, variations to which the last-named species is subject.

This material shows conclusively that the peculiar Marsh Wrens from Georgia and South Carolina, just alluded to, are quite distinct from *marianæ* and represent a strongly characterized form which may be described as follows:—

**Cistothorus palustris griseus**, new subspecies. WORTHINGTON'S MARSH WREN.

*Subspecific characters:* Of the size and proportions of *C. marianæ* but with less black above and no distinct dark markings on the under tail-coverts, flanks, sides or breast. General coloring very much paler and grayer than in either *marianæ* or *palustris*. Bill colored as in *C. marianæ*.

Type, ♂ (No. 19,008, collection of William Brewster, Sapelo Island, Georgia, Nov. 17, 1887, W. W. Worthington): Above including the wings, tail, and the sides of the head and neck, hair brown with the faintest possible tinge of reddish on the hind back, rump, and upper tail-coverts; sides of crown clove brown; the feathers over a short, narrow area on the middle of he back dull black with narrow white shaft streaks; inner secondaries edged with blackish; upper tail-coverts and middle tail-feathers with indications of

[1] The specimens here mentioned were recorded by me in the Auk (Vol. V, no. 4, Oct., 1888, p. 432) as *C. marianæ*, and this form was afterwards reported from Charleston, South Carolina, by Mr. Wayne (Auk, Vol. VIII, no. 2, April, 1891, p. 239) and by Mr. Ridgway (ibid., p. 240). I have not seen Mr. Ridgway's bird, but Mr. Wayne's—for the identification of which I am responsible—was similar to the specimens taken in Georgia by Mr. Worthington.

dusky bars, appreciable only in a good light; outer two pairs of tail-feathers with broad, continuous, and perfectly distinct dark bands; middle of throat and abdomen pure white; remaining under parts pale grayish brown more or less tinged with pinkish on the jugulum and sides; under tail-coverts whitish with very faint, confused, transverse markings of reddish brown; similar but still fainter reddish markings on the breast and flanks; a fairly well defined, whitish, superciliary stripe. Bill uniform dark horn color, lightening only at the extreme base of the lower mandible where it is brownish flesh-color.

The small size, short wings, slender bill, dark under mandible, and clouded breast of this form, indicate that it is most nearly related to *marianæ*, despite the fact that its general coloring is even paler and more uniform, and its dark markings are less pronounced, than in *palustris*, whereas *marianæ* is decidedly the deepest colored and most boldly marked of the three. In respect to the coloring of the upper parts Mr. Scott's types do not represent his bird at all fairly, for they are exceptional in having rather less and duller black on the crown and back than is usually found in *palustris*. Average specimens of *marianæ* have more black than *palustris*, and the dark extremes show little or no trace of the usual light area on the centre of the crown, practically the whole top of the head, as well as the nape, being solidly black.

The dark bars of the rump and upper tail-coverts, although usually present and often conspicuous, are nearly or quite wanting in some otherwise typical specimens of *marianæ*, but the conspicuous barring of the under tail-coverts is very constant and affords one of the best characters of this form.

My specimens of *griseus* exhibit a good deal of individual variation; but with the exception of one bird, which has a few distinct blackish spots on the flanks and sides of the breast, they maintain very uniformly the characters mentioned in the above diagnosis. Several are even grayer and less marked than the type, and Mr. Hardy's bird (♂, McIntosh Co., Georgia, Feb. 1, 1893, W. W. W.) actually lacks nearly all trace of the usual black areas on the head and back, the uniform grayish brown of the upper parts being diversified only by a scarcely appreciably dusky stripe on each side of the crown and a few minute, half-concealed, whitish spots on the interscapulars. In the general coloring of the under parts *C. p. griseus* bears a curiously close resemblance to the

gray extreme of *Troglodytes a. aztecus*. Indeed I find it possible to select specimens of the two which, when laid side by side on their backs, are scarcely distinguishable by color alone.

For comparison with the following measurements of the ten specimens of *griseus* I have added these of an equal number of representatives of *marianæ* and *palustris* selected quite at random from the large series before me. The measurements are in inches.

*C. p. griseus.*

| Cat. No. Col. W. B. | Sex | Locality | Date | Wing | Tail | Tars. | Cul. from feathers | Cul. from nostril | Depth of bill at nostril |
|---|---|---|---|---|---|---|---|---|---|
| 42,104 | | Mt. Pleasant, S. C. | Mar. 9, 1891 | 1.72 | 1.41 | .69 | .50 | .41 | .13 |
| 42,013 | ♂ | " " " | Oct. 14, " | 1.79 | 1.54 | .76 | .50 | .40 | .12 |
| ——— | ♂ | McIntosh Co., Ga. | Feb. 1, 1893 | 1.94 | 1.66 | .77 | .57 | .41 | .12[1] |
| 19,008 | ♂ | Sapelo Island, Ga. | Nov. 17, 1887 | 1.84 | 1.62 | .75 | .50 | .38 | .12[2] |
| 19,007 | ♂ | " " " | " " " | 1.82 | 1.51 | .77 | .50 | .38 | .12 |
| 19,009 | ♂ | " " " | Dec. 14, " | 1.92 | 1.68 | .77 | .54 | .44 | .13 |
| 19,012 | ♂ | " " " | " " " | 1.84 | 1.57 | 73 | .53 | .44 | .12 |
| 19,010 | ♀ | " " " | Jan. 28, 1888 | 1.66 | 1.32 | .71 | .43 | .37 | .11 |
| 19,011 | ♀ | " " " | Dec. 3, 1887 | 1.72 | 1.54 | .73 | .50 | .38 | .12 |
| ——— | ♀ | McIntosh Co., Ga. | Jan. 23, 1890 | 1.74 | 1.52 | .70 | .50 | .40 | .11 |

*C. p. marianæ.*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ——— | ♂ | Tarpon Sp'gs, Fla. | Jan. 6, 1888 | 1.87 | 1.69 | .73 | .50 | .40 | .12[3] |
| 27,161 | ♂ | " " " | " " 1890 | 1.90 | 1.79 | .73 | .54 | .42 | .12 |
| 27,163 | ♂ | " " " | " 9, " | 1.86 | 1.63 | .77 | .56 | .42 | .12 |
| 27,165 | ♂ | " " " | " 13, " | 1.92 | 1.74 | .75 | .52 | .41 | .13 |
| 27,164 | ♂ | " " " | " " " | 1.92 | 1.71 | .71 | .53 | .40 | .12 |
| 27,169 | ♂ | " " " | Dec. 30, 1889 | 1.91 | 1.80 | .70 | .54 | .44 | .12[4] |
| ——— | ♂ | " " " | Feb. 9, 1888 | 1.98 | 1.70 | .73 | .52 | .41 | .12 |
| ——— | ♀ | " " " | Jan. 5, " | 1.85 | 1.57 | .73 | .48 | .37 | .12[5] |
| 27,172 | ♀ | " " " | " 6, " | 1.82 | 1.62 | .73 | .53 | .42 | .13 |
| 27,180 | ♀ | " " " | Feb. 28, " | 1.80 | 1.73 | .72 | .50 | .42 | .13 |

*C. palustris.*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 13,879 | ♂ | Near Concord, Mass. | June 7, 1887 | 2.05 | 1.78 | .77 | .51 | .38 | .13 |
| 13,876 | ♂ | " " " | " " " | 1.95 | 1.69 | .72 | .54 | .40 | .13 |
| 42,183 | ♂ | New Haven, Conn. | May 19, 1891 | 1.92 | 1.75 | .78 | .51 | .38 | .13 |
| 42,184 | ♂ | " " " | " " " | 1.95 | 1.78 | .80 | .50 | .38 | .13 |
| 14,223 | ♂ | Yemassee, S. C. | Jan. 4, 1888 | 2.05 | 1.74 | .80 | .56 | .43 | .12 |
| 12,137 | ♂ | Near Charleston, S. C. | Nov. 9, 1886 | 2.07 | 1.86 | .79 | .54 | .41 | .12 |
| 12,774 | ♂ | Kankakee Marshes, Ind. | Apr. 27, 1886 | 2.11 | 1.86 | .80 | .52 | .40 | .13 |
| 13,893 | ♀ | Near Concord Mass. | June 7, 1887 | 1.90 | 1.68 | .73 | .50 | .37 | .11 |
| 13,895 | ♀ | " " " | " 17, " | 1.87 | 1.60 | .75 | .50 | .39 | .12 |
| 14,225 | ♀ | Yemassee, S. C. | Jan. 4, 1888 | 1.98 | 1.73 | .79 | .51 | .40 | .12 |

[1] Coll. M. Hardy.

[2] Type.

[3] Am. Mus. no. 30,195.

[4] Am. Mus. no. 30,197.

[5] Tail partly gone. Type. Am. Mus. no. 30,194.

The essential points of difference between the three eastern forms of the Long-billed Marsh Wren may be tabulated as follows:—

A.—Size larger, bill stouter, the basal third or more of the lower mandible flesh-colored. Brown of sides, flanks and upper parts clear reddish. White of lower parts usually continuous from chin to crissum.—*C. palustris.*

B.—Size smaller, bill slenderer, the lower mandible horn-colored with, at most, only the extreme basal portion flesh-colored. White of lower parts usually interrupted by a band of dusky grayish or reddish spots or clouding across the breast, and elsewhere confined to a comparatively narrow central space by the encroachment of the brown or grayish of the sides.

1.—Black of the upper parts usually deeper and more extended than in *palustris* and frequently covering practically the entire crown, nape and most of the back. Brown of sides, flanks, and upper parts deep and rusty with a tinge of olive. Under tail-coverts and frequently the flanks, sides, and breast also, boldly marked with black or dusky spots or bars.—*C. p. marianæ.*

2.—Black of upper parts much duller and less extended than in *palustris*, usually confined to the extreme sides of the crown and a short narrow area in the middle of the back, and in extreme specimens almost wholly absent. Brown of sides, flanks, and upper parts pale and grayish. Dark markings of the under tail-coverts, flanks, sides, and breast faint, confused and inconspicuous, sometimes practically wanting.—*C. p. griseus.*

Whether or no *C. p. marianæ* and *C. p. griseus* intergrade, and what are their respective habitats during the breeding season, are points on which my material throws no light. Intergradation is certainly probable, but by no means certain, for if, as seems not unreasonable, we may assume that *marianæ* is resident on, and confined to, the Gulf Coast, and *griseus* equally restricted, at all seasons, to the South Atlantic seaboard, their respective habitats may be, for birds of such sedentary habits, practically isolated. If this should prove true, one of the most curious features of the case will be the fact that so very pale a form as this new Wren has been developed in the salt marshes of Georgia and South Carolina, where its associates, the Seaside Finches and Clapper Rails, although of not dissimilar general coloring, are somewhat darker, instead of much grayer, than their more northern representatives.

# A LIST OF THE BIRDS COLLECTED ON THE ISLAND OF TOBAGO, WEST INDIES, BY W. W. BROWN, JR., DURING APRIL AND MAY, 1892.

BY CHARLES B. CORY.

THE collection made by Mr. Brown contained over seven hundred bird skins and a few mammals, including two specimens of *Sciurus griseogenys* Gray. The birds are especially interesting, several of them being new to the island.

Sterna elegans *Gamb.*
Ardea virescens *Linn.*
Ionornis martinica (*Linn.*).
Ortalis ruficauda *Jard.*
Columba rufina (*Temm.*).
Engyptila verreauxi (*Bp.*).
Columbigallina rufipennis (*Bp.*).
Geotrygon linearis (*Knip et Prev.*).
Buteo latissimus *Wils.*
Spizaëtus manduyti *Daud.*
Amazona amazonica (*Linn.*).
Crotophaga ani *Linn.*
Dendrobates kirki (*Malh.*).
Melanerpes terricolor *Berlepsch.*
Chloronerpes rubiginosus (*Sw.*).
Trogon collaris *Vieill.*
Momotus swainsoni *Sclater.*
Ceryle americana *Gm.*
Galbula ruficauda (*Cuv*).
Chrysolampis moschitus (*Linn.*).
Florisuga mellivora (*Linn.*).
Amazilia erythronota (*Less.*).
Campylopterus ensipennis (*Swain.*)
Formicivora intermedia *Licht.*
Dysithamnus semicinereus *Sclater.*
Thamnophilus doliatus (*Linn.*).
Dendrornis sussurans *Jard.*
Pachyrhamphus albo-griseus *Scl.*
Pachyrhamphus niger *Spix.*
Chiroxiphia pareola (*Linn.*).
Tyrannus melancholicus *Vieill.*
Myiarchus tyrannulus (*Müll.*).
Elainea pagana (*Licht.*).
Ostinops decumanus (*Pall.*).
Molothrus atronitens (*Cab.*).
Euetheia bicolor (*Linn.*).
Spermophila lineata (*Gm.*).
Volatinia splendens (*Vieill*).
Tanagra sclateri *Berlepsch.*
Tachyphonus melaleucus *Sparrm.*
Vireo chivi (*Vieill.*).
Hylophilus insularis *Sclater.*
Progne dominicensis (*Gmel.*).
Cœreba luteola (*Cab.*).
Arbelorhina cyanea (*Linn.*).
Troglodytes tobagensis *Lawr.*
Thryothorus rutilus (*Vieill.*).
Mimus gilvus *Vieill.*—In a series of *Mimus* from Tobago all the specimens are paler and more ashy in color on the upper parts than birds from Grenada and St. Vincent.
Merula xanthosceles (*Jard.*).
Merula gymnophthalma (*Caban.*).

# BIRDS OBSERVED ON MACKINAC ISLAND, MICHIGAN, DURING THE SUMMERS OF 1889, 1890, AND 1891.

BY STEWART EDWARD WHITE.

THE ISLAND of Mackinac is situated in the straits of the same name between the two peninsulas of Michigan. It is a rocky island surrounded by steep bluffs which recede far enough inland on the southeast side to form a plain of sufficient size to contain the town and a few adjacent meadows. The only cultivated land is at Early's farm, a clearing of about two hundred acres, the major part of which is pasture. The island itself is six miles by three in its widest parts and contains somewhat over twenty-four hundred acres.

It is nearly completely encircled by a belt of evergreens, varying in width from fifty to several hundred feet, while the middle is occupied by a deciduous growth. Of the evergreens the outer edge is composed chiefly of cedars, while the inside contains balsam firs, hemlocks, and tamaracks. In a few places the hemlocks and firs are found scattered over stony ground free from brush. Both red and white pines occur in scattered clumps. Of the deciduous trees the hard maple is by far the most numerous, with many elms, beeches, white birches, and a few oaks, ironwoods, black birches, silver and soft maples. These woods are remarkably free from brush, though this is more than made up for by a large and almost impenetrable thicket of scrub maples, birches, hazels, oaks, hemlocks, and tamaracks. This occupies about two hundred and fifty acres southwest of the centre of the island, and is most fruitful during migrations.

The island does not offer favorable conditions for the occurrence of most water birds. The water being deep and the coast line unbroken, little food and shelter is offered the Ducks; as there is no beach, the shore birds pass by; the absence of swamps precludes the presence of their inhabitants.

Owing probably to the small size of the island, and to its location, bird waves were strongly defined and easily observed, and were made an object of especial study the results of which

were too extensive to admit of treatment here. It might be observed in general, however, that the migrations there, on the 45th parallel, were from seventeen to twenty days earlier than in Kent County (43°).

The following list gives the result of three summers' active field work. My observations extended from July 1 to Sept. 24, 1889, from July 2 to Sept. 26, 1890, and from July 10 to Sept. 18, 1891, during which time I was constantly in the field. I wish to acknowledge assistance from my brother, Mr. T. Gilbert White, especially during my absence of a week in the middle of August, 1890, and for notes by Dr. R. M. Gibbs of Kalamazoo, June 11 and 12, 1885.

**Podilymbus podiceps.**—Rare. Occasionally observed in the harbor during the middle of September.

**Urinator imber.**—Rare visitant from Les Cheneaux Islands where they are common. Seen fishing in the harbor or flying by.

**Rissa tridactyla.**—Rare. A few accompany the large Gulls in their migrations.

**Larus marinus.**—Very rare migrant.

**Larus argentatus smithsonianus.**—Common summer visitant and abundant migrant. Said to breed on Bois Blanc Island. In fall they are abundant but very wild. The first migrants arrived about the middle of August.

**Larus delawarensis.**—Common migrant. First seen about August 15.

**Larus philadelphia.**—Dr. Gibbs "saw a flock."

**Sterna tschegrava.**—Thousands of large Terns accompany the Gulls in migration, but are shy. They resemble each other so much that identification on the wing is very uncertain. I repeatedly took this Tern, and should call it common.

**Sterna maxima.**—I examined several specimens. Rather more rare than *S. tschegrava*.

**Sterna hirundo.**—A specimen observed by T. G. White, Aug. 28, 1890.

**Hydrochelidon nigra surinamensis.**—Dr. Gibbs "saw several."

**Merganser americanus.**—Not uncommon summer resident in the vicinity of Round Island, a small piece of land a mile from Mackinac.

**Merganser serrator.**—Not uncommon summer resident at Round Island. A set of nine incubated eggs was taken there, July 4, 1891, from a nest of cedar bark on the ground under a spreading branch of a cedar, about fifty feet from the water but within five feet of a stone beach.

**Anas boschas.**—Rather rare visitant. Seen more often flying by.

**Aix sponsa.**—A male was seen July 11, 1889, sitting on a horizontal limb over a small pond of water, which was caused by heavy rains.

**Charitonetta albeola.**—I observed one flock of eight July 3, 1890.

**Erismatura rubida.**—I examined a single specimen killed by a boy Sept. 3, 1890.

**Botaurus lentiginosus.**—Rare resident in the marshes near Early's farm and the town. Several observed at various times, and one specimen taken by T. G. White.

**Ardea herodias.**—Rare summer visitant from Les Cheneaux where it is common.

**Rallus virginianus.**—Very rare summer resident.

**Porzana carolina.**—Common summer resident in marshes at Early's.

**Fulica americana.**—Dr. Gibbs "saw one."

**Philohela minor.**—Not a common summer resident in dry woodlands. Often flushed from the middle of shaded roads towards evening.

**Gallinago delicata.**—Rare migrant. I flushed one in a meadow Sept. 17, 1889.

**Tringa minutilla.**—Rather rare migrant on Round Island.

**Ereunetes pusillus.**—One specimen taken Sept. 4, 1889.

**Totanus solitarius.**—In 1890 and 1891 not a rare summer resident. None present in 1889.

**Actitis macularia.**—Very common summer resident. Feeds on stone spiders.

**Ægialitis vocifera.**—Dr. Gibbs "saw a pair."

**Colinus virginianus.**—The usual northern limit of this bird is about the latitude of Petoskey, so the discovery of two July 24, 1890, was somewhat surprising. None were seen before or since. Mr. Early states that they were once common on his farm, but were exterminated by hunters.

**Ectopistes migratorius.**—A large flock was seen feeding in beech woods August 30, 1889, after which they were frequently seen. About a hundred were observed Sept. 10, and on Sept. 12 the main body departed. But a few individuals were present when I left. None were observed in 1890 or 1891.

**Zenaidura macroura.**—Rare in summer.

**Circus hudsonius.**—Common migrant, frequenting the overflowed meadows near Early's farm. First seen Aug. 3; became common Aug. 5; last seen Aug. 22.

**Accipiter velox.**—Common migrant near Early's farm where it preys on chickens, Flickers, and even ventures to attack the Crows. A fearless bird, permitting close approach. First seen Aug. 8–21; still present when we left the island.

**Accipiter cooperi.**—Common migrant. Occurs in smaller numbers than *A. velox*. It has about the same dates of arrival and departure.

**Accipiter atricapillus.**—In 1889 two pairs of this fine bird could be seen on any clear day. They were not given to sailing high in the air as do the Buteos, but swept over the country just above the tops of the trees. In 1890 but one pair was observed, and upon inquiry I found a boy who claimed to have shot a "large white hawk with black on his head; he weighed three pounds." So it is probable that he secured one of this

species. The last pair had disappeared in 1891. My efforts to procure specimens were unavailing, although I saw them almost daily, and with powerful glasses examined them both sailing and perched. I am familiar with the bird, and am sure there can be no mistake in identification.

**Buteo borealis.**—Rare summer visitant, though at times common when they come over from the mainland to hunt.

**Buteo lineatus.**—Rare summer resident, and at times a rather common visitant. A pair lived on the island in 1890.

**Buteo latissimus.**—The only record for this species is one, Sept. 1, 1889.

**Haliæetus leucocephalus.**—In 1889 three of these birds, two adults and one young, were seen at various times during the summer. In 1890 only one of the old ones and the young one were observed. The female was shot by a local taxidermist. In 1891 two mature and two young were on the island. These birds are common at Les Cheneaux.

**Falco sparverius.**—Common migrant. Arrives about the middle of August and remains until the middle of September.

**Pandion haliaëtus carolinensis.**—Rare visitant from the mainland where it is rather common.

**Syrnium nebulosum.**—I found the remains of one in July, 1889, and saw two Aug. 15, 1890.

[**Nyctala acadica.**—My brother, T. G. White, who knows the bird, writes me of a bird of this species which he saw in captivity at various times during the summer of 1892.]

**Coccyzus americanus.**—One seen July 6, 1889.

**Coccyzus erythrophthalmus.**—One specimen taken July 13, 1889. Not uncommon summer resident in 1890 and 1891.

**Ceryle alcyon.**—Rather rare during 1889. Very common in 1890 and 1891.

**Dryobates villosus.**—Rare. Seen Aug. 9 and Sept. 6, 1890, and July 28, 1891.

**Dryobates pubescens.**—Not a Woodpecker is found on the island during the summer, and this is the first species to appear, arriving the last of July.

**Sphyrapicus varius.**—Rare migrant; a number observed at widely separated intervals.

**Ceophlœus pileatus.**—Rare, in the high maple woods. Said to be common in winter.

**Melanerpes erythrocephalus.**—In 1889 a rare migrant; I shot two immature birds Sept. 11 and 14. Not uncommon migrant in 1890 and 1891. Arrives from Sept. 4 to 9.

**Colaptes auratus.**—Abundant migrant. Arrives July 15–25.

**Chordeiles virginianus.**—Rare summer resident and common migrant. Becomes common Aug. 12–27. Last seen Sept. 2–5.

**Chætura pelagica.**—Common summer resident. Last seen Aug. 29–Sept. 2.

**Trochilus colubris.**—Rare resident. Seen at all times of the summer and in the fall even after most Warblers had departed.

**Tyrannus tyrannus.**—In 1889 but one pair was observed, but in 1890 three pairs were seen, and in 1891 they were quite common. Migrants become common Aug. 3–9, and all depart Aug. 26–30.

**Sayornis phœbe.**—In 1889 a rare summer resident until Aug. 26. In 1890 none were seen. In 1891 one pair observed occasionally. Frequents the scattered woods.

**Contopus borealis.**—One specimen shot Aug. 15, 1890.

**Contopus virens.**—Not common as a summer resident, but a common migrant. Frequents the deciduous woods. Becomes common Aug. 7–10. Last seen Sept. 2–10.

**Empidonax flaviventris.**—Rare migrant; taken Aug. 14 and 30, 1890.

**Empidonax acadicus.**—Common migrant. I have taken many specimens. Frequents impartially the open woods and high scrub growths. Arrives Aug. 10–16; departs Aug. 31–Sept. 6.

**Empidonax pusillus traillii.**—Abundant migrant. Arrives Aug. 5–14; departs Sept. 3–10.

**Empidonax minimus.**—In 1889 this species was observed only as a common migrant, but in 1890 and 1891 a few were found during the summer near Early's farm. In 1889 it was first seen Aug. 3. It becomes common about the last of August and disappears in a few days.

**Otocoris alpestris.**—Very common about the middle of September. The Indians shoot numbers of them for food under the name of 'Yellowthroat.'

**Cyanocitta cristata.**—In 1889 and 1891 very common summer resident. Rather more scarce in 1890. Useful as scavengers.

**Perisoreus canadensis.**—On July 10, 1889, a flock of eight flew over me low down and headed for the Upper Peninsula. I did not see them again, but am certain as to their identity, for I am perfectly familiar with the 'Meat Hawk.'

**Corvus americanus.**—An abundant resident and very tame. I have often approached within a few feet of them while feeding. As there are no crops to be damaged, the inhabitants protect them for their services as scavengers.

**Molothrus ater.**—Rare migrant, seen occasionally during September in scattered flocks.

**Sturnella magna.**—Rare visitant. I flushed four in a meadow near town July 12, 1889, but none were seen before or since.

**Scolecophagus carolinus.**—Saw a flock of about twenty at Early's farm Sept. 22, 1889. None observed in the other years.

**Quiscalus quiscula æneus.**—For four days in 1889, Sept. 11–14, these birds migrated through the island in abundance, but none were observed in 1890 or 1891.

**Carpodacus purpureus.**—Common summer resident. Frequents the evergreens where its loud and clear song may be heard morning and evening, and during the whole of cloudy days.

**Loxia curvirostra minor.**—Common summer resident. Probably breeds

early, as old and young were gathered into large flocks when we reached the island during the last week in June.

**Loxia leucoptera.**—Rare summer resident. I have frequently observed this species and once, July 9, 1890, I secured a specimen.

**Spinus tristis.**—Common summer resident.

**Spinus pinus.**—Not observed during 1889 or 1890, but fairly common in large scattered flocks July 27–29, 1891. Rather more shy than in winter.

**Poocætes gramineus.**—Common summer resident in the pastures at Early's farm. Not observed elsewhere. Departs for the south about the middle of September.

**Zonotrichia leucophrys.**—Rare migrant; one observed in the bushes Aug. 12, 1889.

**Zonotrichia albicollis.**—Abundant summer resident among the scattered evergreens. Last observed Sept. 2–5.

**Spizella socialis.**—Common summer resident. Found everywhere, but not in such abundance as farther south. Departs about Sept. 12.

**Spizella pusilla.**—Rather common summer resident in suitable localities. Departs Aug. 10–24.

**Junco hyemalis.**—Common summer resident.

**Melospiza fasciata.**—Common summer resident. Still present when I left.

**Pipilo erythrophthalmus.**—One pair was observed during the summer of 1890, but none were seen the other years.

**Habia ludoviciana.**—A young male was shot July 24, 1890, among the bushes near Early's farm. I examined an adult male said to have been collected on the north shore near St. Ignace.

**Passerina cyanea.**—In 1889 and 1891 a common summer resident, frequenting the scattered evergreens and bushes. In 1890 only a few were observed. Departs about the last week in August.

**Piranga erythromelas.**—Rare. A female of this species was shot in the oak woods Aug. 3, 1889, but a careful search failed to disclose a male. A male was observed July 17, 1891.

**Progne subis.**—Two pairs observed in 1889, four pairs in 1890, and nine pairs in 1891. Breeds about the Grand Hotel. Departs Aug. 7–20.

**Petrochelidon lunifrons.**—Rare in 1889, about a dozen being observed. Abundant migrant in 1890, becoming numerous Aug. 4, 5, and 6, and again Aug. 20 and 21. In 1891 they were quite common until July 29 when all disappeared.

**Chelidon erythrogaster.**—Abundant summer resident. Breeds under the wharves. The bulk departs about Aug. 5, but a few individuals are seen until Sept. 7–11.

**Tachycineta bicolor.**—Abundant summer resident. Breeds abundantly in boxes placed for that purpose. Straggles away anywhere between Aug. 7 and Sept. 3. This and the preceding occur in countless thousands, and when disturbed rise in clouds.

**Clivicola riparia.**—Two individuals of this species were observed July

10, 1889. In 1890 and 1891 they bred abundantly in a gravel pit near Early's farm, departing in the first week of August.

**Stelgidopteryx serripennis.**—I found one of this species dead in July, 1890, but never saw a living example although I searched diligently.

**Ampelis cedrorum.**—Common summer resident.

**Vireo olivaceus.**—Abundant summer resident in maple woods and bushes. Departs Sept. 2–6.

**Vireo philadelphicus.**—I shot a female of this species Aug. 6, 1889, in a raspberry patch, the fruit of which it was eating. I secured an immature specimen Aug. 7, 1890, and observed two adults Sept. 6, 1890, one of which I secured.

**Vireo gilvus.**—Not a common summer resident. Departs Aug. 6–10.

**Vireo flavifrons.**—One specimen Aug. 5, 1891.

**Vireo solitarius.**—One taken by T. G. White in August, 1891. I have not the exact date at hand.

**Mniotilta varia.**—Not a common summer resident but an abundant migrant. Found during summer in the evergreens on the steep bluffs. First migrants arrive Aug. 7–10; common by Aug. 26; last seen Sept. 2–6.

**Helminthophila pinus.**—On Sunday, July 1, 1889, I saw a fine male of this species in an evergreen tree. He permitted the closest scrutiny, sometimes approaching within a few feet of my head in his search for food. I could not find him again the next day.

**Helminthophila chrysoptera.**—Not present in 1889 and 1890. In 1891 a number were constantly observed in the bushes until July 26.

**Helminthophila ruficapilla.**—Rare summer resident and common migrant. In summer found among the evergreens; during migrations, among the bushes. The first migrants straggle along about Aug. 10; the bulk arrives in a body about Aug. 25–Sept. 5, and all disappear within a day or two.

**Helminthophila peregrina.**—Common migrant. Found in bushes and evergreens, rarely in the open woods. Arrives Aug. 6–24; bulk arrives inside of a week; and all leave in a few days, Aug. 28–Sept. 6.

**Compsothlypis americana.**—Abundant migrant in low bushes and maple woods. First seen Aug. 22–Sept. 1; the bulk arrives almost immediately; and all depart soon, Sept. 5–6.

**Dendroica tigrina.**—Not uncommon migrant in 1890 and 1891. First seen Aug. 30; departs Sept. 6.

**Dendroica æstiva.**—Abundant summer resident. Breeds in the evergreens. At first very common; every day sees a diminution of their numbers, until by Aug. 10–12 the last have departed.

**Dendroica cærulescens.**—In 1889 this species was observed only as a common migrant, but in the succeeding years I found it a not uncommon summer resident. In summer it inhabits the maple woods, but in migration it frequents the evergreens. First seen, in 1889, August 15. Becomes common Aug. 9–21, and departs about the middle of September.

**Dendroica coronata.**—In 1889 one female was shot July 13, after which the species was not observed until the migration. In 1890 and 1891 they

were rather common during the summer in the high evergreens. The summer residents departed in a body Aug. 1, 1890, and under the date of Aug. 7 Dr. Gibbs wrote from Kalamazoo that the first Myrtle Warblers had arrived. No migrants from the north had yet reached Mackinac. Bulk arrives about the middle of August, and all depart the first week in September.

**Dendroica maculosa.**—Found abundantly in the bushes where it is the characteristic summer bird. Departs Sept. 6–11. I detected seven distinct songs of this species, no one of which is even a variation of the other.

1. Three notes followed by one lower: *che-weech che-weech che-ó.*

2. Three sharp clear whistles with a strong *r* sound, then a warble of three notes, the middle the highest, the latter clear cut and decisive: *pra pra pra r-é-oo.*

3. Two quick sharp notes followed by a warble of three notes, the middle the highest: the warble is soft and slurred: *prût pût purreao.*

4. A soft falsetto warble, different in tone from any other bird song: *purra-ĕ-whuy-a.*

5. Of the same falsetto tone, uttered rapidly: *prut-ut-ut-ut-ut.*

6. A harsh note like, in miniature, the cry of a Jay: *d kay kay kay.*

7. A harsh *k-e-e-e-dl*, the last syllable higher by a shade, quick, and subordinated to the first part. The alarm note is a sharp *zeek.*

**Dendroica pensylvanica.**—Rare summer resident and common migrant. Becomes common the middle of August, and departs the second week in September.

**Dendroica castanea.**—Rare summer resident and abundant migrant. Found principally among the bushes. Bulk arrives Aug. 28 – Sept. 3. Departs the middle of the month.

**Dendroica striata.**—Rare summer resident and abundant migrant Found with *D. castanea;* dates of arrival about the same.

**Dendroica blackburniæ.**—Observed during 1889 only as a very common migrant frequenting maple woods, during its stay. First seen, in 1889, on Aug. 8, on which date it became common. In 1890 and 1891 it was a rather common summer resident among the evergreens. Bulk arrives July 30 – Aug. 8; departs Aug. 31 – Sept. 6.

**Dendroica virens.**—Abundant summer resident, found principally among the evergreens, though many were observed in the deciduous woods. Departs in the middle of September.

**Dendroica vigorsii.**—Rare. In 1889 three were seen on Aug. 14; in 1890 I heard a few sing during the first part of July. A few migrants also were observed at wide intervals.

**Dendroica palmarum.**—Common migrant; arrives late. Found in open fields and on the edges of bushy tracts.

**Dendroica discolor.**—Common migrant in bushy country. I took many specimens. Arrives Aug. 10–15; departs Sept. 2–6.

**Seiurus aurocapillus.**—Common in the maple woods. On several occasions it has been my good fortune to hear the beautiful vesper song of this species. Departs Aug. 17 – Sept. 6, a wide difference.

**Geothlypis agilis.**—I took two specimens, both in the bushes, one Aug. 30, 1889, the other Aug. 30, 1890.

**Geothlypis philadelphia.**—My brother, T. G. White, shot several of this species in the latter part of August, 1890. Very rare.

**Geothlypis trichas.**—Not a common summer resident. None observed in 1889. Departs Aug. 23–26.

**Sylvania pusilla.**—Rare migrant in 1889, a flock of seven Aug. 26 and one female Aug. 30. In 1890 and 1891 a very abundant migrant. Found in new growths and small evergreens. First seen Aug. 25–28; the bulk arrived Aug. 26 – Sept. 1; and a few were still present when I left.

**Sylvania canadensis.**—In 1889 a rare summer resident and common migrant. In 1890 and 1891 a very common summer resident, its loud song being heard in every patch of evergreens. The young birds left the nests July 2–8. It was still present when we left the island.

**Setophaga ruticilla.**—The most characteristic bird of the island. It occurs in such amazing abundance that it seems as if every tree contained one of these birds. Still present when I left.

**Harporhynchus rufus.**—Not a common summer resident. A few were found near the town and in the hedge-rows at Early's farm. Departs the first week in August.

**Troglodytes aëdon.**—In 1889 but two pairs bred at Early's, but the other years they bred commonly about the cottages. Very common as migrants, foraging about in the maple woods in large bands. Bulk arrived Aug. 2–5; departed Aug. 16–24.

**Troglodytes hiemalis.**—Very common summer resident. I find it impossible to give dates of abundance and departure, because after the song season these birds are very hard to discover.

**Certhia familiaris americana.**—Rare. Two were observed Aug. 3, 1889.

**Sitta carolinensis.**—This species was very rare on the island. One was observed Aug. 3, 1889, and one July 2, 1890.

**Sitta canadensis.**—Common summer resident and abundant migrant. Found everywhere, but more especially in the low pines. First migrants Aug. 2–10. Still present when I left.

**Parus atricapillus.**—Abundant resident. Found everywhere.

**Regulus satrapa.**—Common summer resident among the evergreens.

**Regulus calendula.**—A rare summer resident and a common and early migrant. I found a nest with four nearly fledged young July 20, 1889. The first migrants arrive July 23 – Aug. 10, and the species departs in the middle of September.

**Polioptila cærulea.**—Rare. Shot one and saw another in mixed woods Sept. 22, 1889.

**Turdus mustelinus.**—Common summer resident in 1890 and 1891. Not present in 1889.

**Turdus fuscescens.**—Absent in 1889. Common among the bushes and scrub growths in the other years. Last seen Sept. 2 and 5.

**Turdus aliciæ.**—One specimen August 23, 1891.

**Turdus ustulatus swainsonii.**—Common summer resident, departing for the south Aug. 29 – Sept. 4.

During the summer of 1891 some very interesting observations were made as to their song habits. The song of the Olive-backed Thrush begins low and ascends by two regular steps of two notes each, and ends with several sharp notes. The first note of each step is higher than the second, and the second of the next is about the same as the first note of the first step. Occasionally the whole is preceded by a sharp *chuck*. The notes have the swelling beauty of all Thrush songs, while the metallic ending rings like a little bell. The song always says to me,—*gurgle gurgle ting, che che che*. As far as my experience goes, this Thrush never sings steadily except in his chosen tree; in fact for two years one has selected for his perch a small evergreen near our cottage, and it was from him that I procured the following data.

He sings on an average nine and a half times a minute with extreme regularity. During the song periods of morning and evening his constancy of purpose is remarkable; except to seize a passing insect, he never breaks the regular recurrence of his song. From a series of records it is found that he begins on an average about 3.15 A. M., and sings steadily (of course I mean by that ten times a minute, not constantly) until about 9.00 A. M.; he is nearly silent until noon, after which he sings occasionally for a minute or so. About 4.30 he begins again, and only ceases to retire for the night about 7.30 P. M. This is a wonderful record, and were it not verified by long experience, I should myself be inclined to consider it exceptional. Allowing but eight times a minute for his songs, we have, for one day, the time consumed in song periods about eight hours and forty-five minutes, and in occasional song, at least twenty minutes, according to which there would be a total of 4,360 songs per day. His song ceased entirely about July 25, although for five days before that but half the time was employed. Certainly it would not be unfair to allow him at the very least six weeks of song, 42 days at 4000 per day, in all 168,000 songs in a season. The above facts have been many times verified.

**Turdus aonalaschkæ pallasii.**—A common summer resident, very entertaining on account of its delightful song. Departs Sept. 2–6.

**Merula migratoria.**—Common summer resident. Shy and a frequenter of the woods, rarely appearing in town.

**Sialia sialis.**—Rare summer resident and abundant migrant. The bulk arrives the middle of August, and departs the middle of September.

---

**Passer domesticus.**—Not one was to be found on the island in 1889 when I first arrived, but within a few weeks about twenty came over with the boat from Mackinaw City. These have increased and now they are quite common.

Besides the above which occur on Mackinac Island proper, I observed the following on the mainland immediately adjacent:—

**Bonasa umbellus** (subspecies?).—Common on both shores of mainland.

**Bubo virginianus.**—One seen on north shore Sept. 3, 1890.

**Corvus corax principalis.**—Common on north shore.

**Melospiza georgiana.**—Very common on north shore.

# A BROOD OF YOUNG FLICKERS (*COLAPTES AURATUS*) AND HOW THEY WERE FED.

BY WILLIAM BREWSTER.

LATE in May, 1892, I noticed a Flicker's hole, then apparently completed, in a very rotten stump covered externally with gray lichens and a species of woody fungus. This stump was one of seven nearly upright but diverging stems, all evidently sprouts from the same roots and six still living. The tree, an ancient white maple, stood on the bank of Concord River, within a few yards of a boat landing. Besides the Flicker's hole the old stump contained at this time two other inhabited nests; a Downy Woodpecker's near the top, and a little lower down a Bluebird's. The Flicker's nest was still lower — about ten feet above the ground.

The Bluebirds first, and shortly afterwards the Downy Woodpeckers, reared and took away their young, after which a pair of House Sparrows entered into possession of the hole which the Downies had vacated. Scarcely had the female Sparrow laid her eggs, when a boy, attempting to climb the stump, broke it off squarely at the entrance hole of the Flicker's nest. For two weeks or more previous to this, I had frequently started one or other of the Flickers from the nest in passing it on my way to the landing; but I had learned little regarding them beyond the fact that their hearing was so keen that I could never quite reach the tree without alarming them, and that during this period (when, as will presently appear, incubation must have been constantly going on) they were frequently at work pecking at the inside of the trunk.

The accident to the stump happened June 23, at about noon. An hour later I examined the nest, which was now entirely open at the top. In the bottom lay five young Flickers, about as large as plucked House Sparrows and perfectly naked. Their eyes were tightly closed and I judged them to be less than a week old. They were writhing and shivering pitifully, the air being cool and damp at the time. I watched the nest for nearly an hour, but saw nothing of the parent birds. As a cold rain storm began soon after and lasted through the following night I con-

cluded that the young Flickers would speedily die, but on the morning of July 1, when I next visited the nest, all five proved to be alive and vigorous. They had more than doubled in size, and were well feathered on the head and body, while their quills and tail feathers were sprouting and their eyes were wide open.

I now noticed for the first time that their upper mandibles were broadly tipped with ivory white. This so exactly resembled the hardened, spur-like process which enables young birds of most, if not all, species to chip their way out of the shell, and which they often retain for several days after hatching, that it was not until after I had taken several of the Flickers from the nest and passing my finger along the bill found its surface absolutely smooth, that I became convinced that the white tipping was merely a color marking and not an excrescence.

Another feature equally conspicuous and common to them all was a whitish gland-like swelling or process on each side of the lower mandible at its base, of about the size of the half of a small pea. All five birds already showed conspicuous black or blackish 'moustaches,' paler, however, in two individuals than in the other three.

On June 23, when the young Flickers were naked and blind, they made a low, penetrating, hissing sound whenever I shook the stump or rattled the bark on the outside. This experiment, repeated July 1, elicited an outcry so loud as to be distinctly audible thirty yards or more away from the tree, and in general effect strongly suggesting, if not also resembling, the clatter of a mowing machine. I afterwards made the direct comparison when a mowing machine was working near the tree and found the two sounds strikingly alike. This clamor, once fairly started, would be kept up for a minute or more and would then gradually die away.

I spent the greater part of July 6 and 7, and most of the afternoon of the 9th, watching this nest. During these three days I saw only the male parent. Probably the female had been killed before my vigils began, although once when the male was calling near the nest, he was answered by another old Flicker, which was apparently in the same tree, but which I did not see. At first the male was very much afraid of me and would not go to the nest while I was near it, but he gradually became accustomed to

my presence, and when I concealed myself partially under a small canoe tent, he would visit the nest while I was sitting in the canoe almost directly beneath it. Thus from a distance of less than fifteen feet, I watched him feed the young. The operation was performed as follows.

The parent returning, after an absence of from eighteen or twenty to sixty minutes, would first alight in the upper part of the cluster of maples among dense foliage. If everything was quiet below he quickly and silently descended and perched on the edge of the hole, sometimes alighting there, but oftener striking against the trunk lower down and running up. If, on the contrary, he saw or heard anything to arouse his suspicions, he approached slowly and with great caution, taking short flights or scrambling backwards down one of the trunks, keeping behind it, occasionally peeping out or down at me, and frequently uttering a few notes of the usual laugh, giving them slowly and somewhat disconnectedly in a peculiar, soft, musical tone. He also uttered a call which I do not remember to have heard before, a low anxious *woi* or *wó-ă*, addressed, apparently, to the young, for they invariably and instantly answered it by a burst of their usual clamor. Occasionally the *woi* cry would be given several times in succession, and would then run directly into the laughing call.

At the first rattle of their parent's claws on the outer surface of the stump, the young appeared at the top of their burrow, and five pink-lined, wide-opened mouths clamored loudly for food. Standing on the edge of the hole, the parent selected one—usually the nearest, I thought—and bending foward and down drove his bill to its base into the gaping mouth which instantly closed tightly round it, when the head and bill of the parent were worked up and down with great rapidity for from one to one and one half seconds (timed with a stop watch), the young meanwhile never once losing its grasp, although its poor little head was jerked up and down most violently.

The first or entering downward thrust of the parent's bill was a veritable stab, the bird apparently striking with all his force and as if with the design of piercing his offspring to the vitals. The subsequent up-and-down motions were rapid, regular, and not unlike those of a Woodpecker engaged in drumming. They

also suggested the strokes of a piston. They were always accompanied by a marked, equally rapid, and apparently corresponding twitching of the tail and hinder parts of the body, and a slighter movement of the wings.

As already stated, the contact of the bills lasted from one second to a second and a half. At its termination the parent would suddenly resume an erect position and look keenly around, at the same time opening and shutting his bill, running out his tongue, and working the upper portion of the throat slightly. This action puzzled me at first. It looked as if the bird were first tasting and afterwards swallowing something which had been obtained from the mouth of the young. After watching the performance many times I came to the conclusion that it was for the purpose of regaining small particles of food which, failing to lodge in the throat of the young, had adhered to the outside of the parent's bill. On one occasion I distinctly saw the old bird, while thus tasting, drop or rub off something from the tip of the bill, and then bending forwards pick it up from the top of the stump and swallow it. The object looked like a large black ant.

If interrupted during the pumping process, as the bird occasionally was, by some motion or noise that I made, it would often feed the same young twice or even thrice in succession, but this never happened when the first period of contact was of normal length.

After resting and tasting for a moment, the parent would again bend forward and for a brief space regard the circle of gaping mouths attentively, evidently hesitating which to take next. The choice made, the operation just described would be exactly repeated. Four young were usually fed at each visit, but sometimes only three, and once but one. When the number was less than four, I think the bird took some alarm and starting off thought it not worth while to return. In no instance were more than four young fed. Whether or no the fifth was served first at the next visit, I had no means of determining.

The time which the old bird spent at the nest rarely exceeded half a minute. On leaving it he always flew straight off over the open fields to a distance of at least a quarter of a mile, beyond which I lost sight of him behind some trees. His return was

made with equal regularity, by way of an orchard which extended down to the landing from the neighboring hillside, and so stealthily that I rarely saw him until he came into the tree, and sometimes not until he appeared at the nest. His bill was always closed up to the moment of contact with that of the young first selected, and I could detect no enlargement of the throat or other evidence that his mouth contained food. In fact it was clear enough that he *swallowed* all the food obtained during these trips and afterwards supplied it to the young by a process of *regurgitation*. What this food consisted of, I can only conjecture, for I did not succeed in finding any of it in the nest or adhering to the bills of the young, and I could not bring myself to kill one of the latter and settle the point in that way.

On the morning of the 6th I found the young for the first time clinging to the walls of their cell, about midway between the bottom and the top. Later in the day, they showed their heads at the opening when the parent came to feed them, and on the 7th they spent most of their time peeping out over the rim with evident curiosity and interest, and once two climbed quite outside. When a boat appeared, or there was any sudden noise, they would all instantly and silently slip back out of sight. On the 7th and frequently afterwards I heard them tapping impatiently on the interior of the old shell.

At six o'clock of the evening of the 9th, I looked into the nest and counted all five of the young. They seemed to be fully grown and perfectly feathered. They were colored precisely alike, as far as I could see, and all had the black moustache as extensive, deeply colored and conspicuous, as in mature males of their species. The white tipping of the bill had been diminishing for several days and on this evening I noticed that two or three birds had almost wholly lost it, while in the others it was confined to the extreme end of the bill.

Four of the young had left the nest when I next visited it on the forenoon of July 10. The fifth bird was still in the hole at five o'clock that afternoon, but at three P. M. the next day I found him perched on one of the upper branches of the tree, calling *ki-u* much in the manner of an old Flicker, but in feebler tones. This cry was regularly answered by another young bird in the orchard behind, and from at least two places across the river.

Evidently the young had already become somewhat scattered. I heard them again on the following day, after which they disappeared.

The nest was left in a very foul state, the bottom being a disgusting mass of muddy excrement, alive with wriggling worms. Apparently the Flicker does not remove the excrement of its young. These young, however, managed to keep very clean, and appeared to be perfectly free from vermin.

No one, apparently, has previously observed, or at least reported, that the Flicker feeds its young by regurgitation. Nor do I find on record anything definite or satisfactory regarding the manner in which the young of the other Woodpeckers are fed before they leave the nest. This would be somewhat remarkable were it not that any attempt to pry into the family secrets of all birds that build in holes is attended with great difficulties. The difficulties can be overcome, however, by the exercise of a little patience and ingenuity, and it is to be hoped that some one who possesses these qualities, as well as the opportunities for applying them, will give the matter close attention, for it both invites and demands thorough investigation.

## ON THE OCCURRENCE OF CERTAIN BIRDS IN BRITISH COLUMBIA.

BY WILLIAM BREWSTER.

AMONG some birds taken in British Columbia by Mr. Allan C. Brooks, and now in my collection, are the following, several of which do not appear to have been previously reported from the Province just named.

1. **Falco sparverius deserticolus.** DESERT SPARROW HAWK.—Three specimens, a male and two females, all taken at Chilliwack.

2. **Picoides americanus alascensis.** ALASKAN THREE-TOED WOODPECKER.—A female Three-toed Woodpecker, labelled as having been obtained on the "Summit of the Cascade Mountains, 8 miles north of Mt. Baker," September 8, 1891, agrees so perfectly with descriptions of

*P. a. alascensis* that I do not hesitate to refer it to that form, of which, however, I have no examples at hand for direct comparison. Mt. Baker is in Washington. The distance in an air line from its summit to the northern boundary of the United States is about twenty miles, but if, as is probable, Mr. Brooks measured his "8 miles" from the base of the northern spur of the mountain, the locality where his bird was shot would be within the limits of British Columbia. In any case the capture extends the range of *P. alascensis* far to the southward of any region where it has been previously found.

3. **Agelaius phœniceus sonoriensis.** SONORAN RED-WINGED BLACKBIRD.—The collection contains five Red-winged Blackbirds belonging to the *A. phœniceus* group taken at Chilliwack in 1891 on the following dates: Three males, January 9; a female, February 9; and a female March 25. All of these have the bill quite as long and slender as in the most extreme examples of *sonoriensis*. Their close relationship with this form is further shown by the generally brown coloring of the females, in both of which, however, the brown of the upper parts is richer, the streaking of the under parts coarser and blacker, and the brownish saffron tinge of the breast and sides deeper than in my representatives of *sonoriensis* from northwestern Mexico. Despite these differences it is perhaps wisest to call the Chilliwack birds *A. p. sonoriensis*, at least for the present. One thing is certain—they are not *A. phœniceus;* in view of which fact the recent announcement[1] by Mr. Rhoads of the occurrence of *phœniceus* in British Columbia may require confirmation.

4. **Rhyncophanes mccownii.** MCCOWN'S LONGSPUR.—Mr. Brooks has kindly given me the following account of his detection of this Longspur in British Columbia: "My first specimen, an adult male in full plumage, was shot on the 2d of June, 1887. At about the same time several years afterwards I took two females on the very same spot. I passed this place every day but saw no others, either there or elsewhere in British Columbia." One of the females just mentioned is now before me. It is an adult bird in rather worn plumage, and is labelled "Chilliwack, June 2, 1890." Mr. Fannin includes this species in his list on Mr. Brooks's authority.

5. **Lanius ludovicianus gambeli.** CALIFORNIA SHRIKE.—A Shrike taken at Chilliwack April 9, 1888, resembles *L. excubitorides* in the clear and nearly immaculate white of its under parts, but above is quite as deeply colored as are dark extremes of *L. l. gambeli.* This combination, with the possession of a bill larger than is often found in either of the forms just mentioned, gives it a remarkably close superficial resemblance to *L. ludovicianus.* As it is scarcely within the bounds of possibility, however, that the last-named form can ever stray so far to the westward, it seems best to refer this puzzling bird to *L. l. gambeli.* It is, I suppose, one of the specimens mentioned in Mr. Fannin's list under the name *excubitorides.*

[1] Proc. Acad. Nat. Sci. Phila., 1893, p. 47.

# THE *VIREO HUTTONI* GROUP, WITH DESCRIPTION OF A NEW RACE FROM VANCOUVER ISLAND.

BY SAMUEL N. RHOADS.

IN 'The Auk' for January, 1893, I referred to the specimens of *Vireo huttoni* taken on Vancouver Island, British Columbia, as follows: "*Vireo huttoni obscurus.* Anthony's Vireo. This may be considered a rather rare visitor on Vancouver Island. I secured one near Victoria. This specimen, also two secured on the same spot by Mr. Maynard in 1891, and which I had the privilege of examining, belong to the strongly characterized race of *Vireo huttoni* proposed by Mr. A. W. Anthony in 1890."[1] Since the publication of this I have had frequent correspondence with Mr. Anthony regarding the real status of his *V. h. obscurus* and have received the skins upon which his original description is based. These skins differ so essentially from the Vancouver Island birds, and so slightly from typical *huttoni* then available for comparison, that it was decided to make a more thorough examination. Through the kind offices of Messrs. Ridgway and Allen, on behalf of the Smithsonian Institution and the American Museum of Natural History, and by the courtesy of Mr. William Brewster, I have been able to examine in all a series of 81 skins of the *Vireo huttoni* group. The whole series may be listed as follows:—

*Vireo huttoni* Cass.

| | | | | | |
|---|---|---|---|---|---|
| Humbolt Bay, | Cala., | 1 | Riverside, | Cala., | 4 |
| Nicasio, | " | 20 | Santa Barbara, | " | 1 |
| Napa Valley, | " | 1 | Temescal, | " | 1 |
| San Francisco, | " | 1 | San Gabriel, | " | 1 |
| Oakland, | " | 3 | Beryessa, | " | 1 |
| Berkeley, | " | 2 | Alhambra, | " | 4 |
| Mt. Diablo, | " | 1 | Santa Ysabel, | " | 4 |
| Wilson's Peak, | " | 1 | "Mexico" (?) | | 1 |
| Santa Cruz Island, | " | 1 | | | |

[1] Zoe, Dec. 1890, p. 307.

*Vireo huttoni stephensi* Brewst.

| | | | | | |
|---|---|---|---|---|---|
| Santa Catalina Mts., Ariz., | 2 | | Mina Abunda, Chihuahua, | | 1 |
| Huachuca Mts., | " | 3 | Jesus Maria, | " | 3(?) |
| Santa Rita Mts., | " | 3 | Bravo, | " | 1 |
| Bacadehuachu, north'n Sonora | 1 | | Carmen, | " | 1(?) |
| Triumfo, Lower Cala. | 1 | | Pinos Altos, | " | 1 |
| Sierra de Laguna, Lower Cala. | 9 | | | | |

*Vireo huttoni obscurus*, Anth.

| | | | | | |
|---|---|---|---|---|---|
| Beaverton, Oregon, | 1 | | Salem, Oregon, | | 1 |

*Vireo huttoni insularis* subsp. nov.

| | |
|---|---|
| Victoria, Vancouver Isl. | 3 |

Three winter specimens from Chihuahua are of questionable identity. I have placed them under *stephensi*, but they are possibly stragglers, driven by stress of weather from the habitat of true *huttoni*. The rest of the specimens are as easily separated by their geographic range as by measurements and plumage, *stephensi* showing an unusual scarcity of intermediates for a subspecies, and the usual variation due to sex, age, and season being so slight in the whole group as to make their classification a comparatively easy task. When compared with a series of true *huttoni* from localities within a radius of a hundred miles of Monterey where Cassin's type was taken,[1] Mr. Anthony's Oregon birds show no characters which make them separable from darker examples of that series. Mr. Anthony, after making more extended comparisons than he was able to make previous to his published description of *obscurus*, had already expressed to me some doubt as to its validity, and as it does not prove to be intermediate between *huttoni* and Vancouver Island specimens, *Vireo huttoni obscurus* will have to be ignored, and another name given the insular form. I would propose the following.

**Vireo huttoni insularis,** subsp. nov. VANCOUVER VIREO.

*Types*, ♂ and ♀, Victoria, British Columbia, Feb. 12, 1891, Provincial Museum collection, A. J. Maynard, collector.

[1] Proc. Acad. Nat. Sci. Phila., 1851, p. 150.

*Subsp. char.* Colors as in *Vireo huttoni*, but much darker, being uniformly shaded over the whole plumage with a sooty suffusion. The olivaceous buffy tints of *huttoni* nearly obsolete in *insularis*. Average measurements slightly less than those of *huttoni*. Sexes alike. Young, in nesting plumage, of similar color to *huttoni*.

Measurements of the entire series were made in millimetres, according to the system used by Mr. Ridgway in his 'Manual,' except that all bill measurements were taken with dividers from pit of nostril to tip of upper mandible.

| | Wing | Tail | Bill |
|---|---|---|---|
| Vireo huttoni, | 60 (58–62) | 50 (48–52) | 6¼ (5½–6⅞) |
| " " stephensi, | 65 (63–68) | 52 (49–54) | 6⅞ (6 –7¼) |
| " " obscurus, | 60 (60–61) | 49 (48–50) | 6¼ (6 –6½) |
| " " insularis, | 61 (61–61) | 49 (48–50) | 5⅞ (5½–6) |

The favorite habitat of Hutton's Vireo and its conspecific allies agrees closely with the sparsely wooded areas where the oak belt overlaps the pine belt, and ranges in conformity with these floral conditions from the sea level in the north to elevations of several thousand feet in more tropical latitudes. The series in my custody shows that this species is resident wherever found, and, with two or three exceptions only, specimens taken south of the United States in winter do not show close enough affinity to true *huttoni* to indicate there is any migration of the northern forms into Mexico or Lower California. It is interesting to note that the oaks, so characteristic of the Pacific coast region, terminate rather abruptly at the Columbia River, and, so far as I have personally investigated the subject, are not found in the State of Washington.[1] On the island of Vancouver, a species of oak (*Quercus garryana*) reappears, and, according to Prof. Macoun, its range in British Columbia is locally restricted to the southern part of that island.

We find here a reproduction of all those conditions which seem so indispensable to the presence of Hutton's Vireo in the south. When we add to this the climatic conditions which have been so notoriously conducive to the development of dark races on the Northwest Coast, with the isolation of *insularis* from the nearest habitat of *huttoni* and its permanent residence on the island, its differentiation becomes almost a foregone conclusion.

[1] "California to Oregon and British Columbia." Sereno Watson, Geol. Cala., Vol. II. "San Francisco Bay to Puget Sound." Green and Kellogg in W. Amer. Oaks.

The habitat of each member of the group may be now quite closely defined.

*Vireo huttoni.* — (Californian.) Pacific slopes of the West Cascade and Sierra Nevada Mountains to the coast, and from the Columbia River to Lower California, including the near-by coast islands. Occasionally wandering into northern Mexico and Lower California in winter.

*Vireo huttoni stephensi.* — (Lower Sonoran.) Mountain ranges of the Sierra Madre and Sierra de Laguna from the Gila River and southern California south to the 28th parallel, and from the Rio Grande to the Pacific Ocean.

*Vireo huttoni insularis.* — (Boreal.) Coextensive with range of *Quercus garryana* on Vancouver Island, British Columbia.

---

## SOME ADDITIONS TO THE AVIFAUNA OF NORTH CAROLINA, WITH NOTES ON SOME OTHER SPECIES.

BY C. S. BRIMLEY.

DURING the past five years I have endeavored to gain what information I could in regard to the occurrence of the rarer North Carolina birds, and am now able to add several to the list of species hitherto found in the State, as well as to offer some further facts concerning other species already recorded from North Carolina.

The following notes are based on observations made by my brother, H. H. Brimley, and myself, and on those of Messrs. J. S. Cairns, of Weaverville, Buncombe County, and Thomas A. Smithwick of Bertie County.

### ADDITIONS TO THE AVIFAUNA OF NORTH CAROLINA.

**Glaucionetta islandica.**— Among the specimens which were purchased by the State to exhibit at Chicago was a Goldeneye, mounted at New Berne in 1892 and said to have been taken near that place. The white of

the wing is divided by a dark bar; the white spot in front of eye reaches the base of the bill; the gloss of the head, however, is green, but seen in one particular light looks purplish.

The very day my brother told me he had tried to identify the above specimen and thought it was probably *islandica*, I received a letter from Mr. Cairns in which he said he had shot a Duck he thought was *islandica*. In a later letter he described it as follows: head purple or wine-colored; white space in front of eye joining the bill at lower mandible and following the bill three fourths of an inch; white on wing divided by black bar; back black; breast pearly white; length 19 inches; sex male; taken in Buncombe Co., February, 1893.

**Hæmatopus ostralegus.**—Several exhibited at the New Berne fair, in February, 1892, said to have been killed in the vicinity.

**Archibuteo lagopus sanctijohannis.**— Seen occasionally in spring and winter in the mountains (J. S. Cairns).

**Nyctala acadica.**—A mounted specimen was exhibited at New Berne in February, 1892, which was said to have been killed near there.

**Empidonax flaviventris.**—One female taken Aug. 11, 1890, near Weaverville by J. S. Cairns.

**Quiscalus quiscula æneus.**—Five taken in Buncombe County, March 16, 1890, by J. S. Cairns. I took one male at Raleigh Nov. 26, 1892.

**Calcarius lapponicus.**—One taken at Raleigh Jan. 13, 1893, and another the following day. Both were in company with Prairie Horned Larks.

**Ammodramus henslowi.**—One female taken at Weaverville, by J. S. Cairns, April 19, 1890.

**Dendroica dominica albilora.**—A female was taken at Weaverville in April, 1891, by J. S. Cairns.

## ADDITIONAL NOTES ON SPECIES ALREADY RECORDED FROM NORTH CAROLINA.

**Colymbus holbœllii.**—Exhibited in the flesh at the New Berne fair in 1892 and 1893.

**Urinator imber.**—One was taken at Raleigh, on the waterworks pond, Nov. 17, 1887.

**Larus philadelphia.**— One was taken by Mr. B. M. Moore in Franklin County, in December, 1889, and was brought to us to be mounted.

**Hydrochelidon nigra surinamensis.**—Taken at Raleigh July 28, 1884; also in 1888, and on Sept. 22 and 23, 1892; all on the old carp ponds.

**Pelecanus erythrorhynchos.**—A pair were taken on the French Broad River in 1888 (Cairns).

**Oidemia deglandi.**—One was exhibited at the New Berne fair in 1892 and several in 1893. Two taken near Beaufort Jan 25, 1893.

**Oidemia perspicillata.**—The commonest Duck in the New Berne market in February, 1893.

**Tantalus loculator.**—About the time that one was killed near Garners in July, 1884, I heard accounts of a number being seen nearer Raleigh, though I never saw any myself. They have never appeared since.

**Ardea cœrulea.**—It usually occurs at Raleigh in July in the white plumage and is sometimes not uncommon.

**Nycticorax violaceus.**—An adult was exhibited at New Berne in 1892, and an immature specimen in 1893, both said to have been taken near that place.

**Porzana noveboracensis.**—Two were exhibited in the flesh at the New Berne fair in February, 1892.

**Tringa maculata.**—Common at Raleigh in March and April, 1889, also a few in 1892, and twice observed in March, 1893.

**Totanus melanoleucus.**—Of irregular occurrence at Raleigh in spring like most of our Sandpipers, but observed in more years than any except the Spotted and Solitary Sandpipers. Like all the others it was commonest in 1889, since which year our Sandpipers have visited us less than previously.

**Bartramia longicauda.**—Common at Raleigh in April, 1887 and 1888, and rare since then.

**Falco columbarius.**—A male and a female were taken at Raleigh, April 21 and 23, 1888.

**Strix pratincola.**—One was killed near New Berne, Feb. 25, 1892.

**Asio wilsonianus.**—One taken at Raleigh, Feb. 19, 1891.

**Sayornis fuscus.**—Tolerably common in winter, but very rare in summer, near Raleigh. I have known of only one pair breeding near Raleigh and they have done so only in the last two years, nesting in an old well within a few yards of our back porch.

**Otocoris alpestris.**—Common at Raleigh during December, 1886, and January, 1887, but not observed since.

**Otocoris alpestris praticola.**—Common at Raleigh in December, 1886, and January, 1887, in company with smaller numbers of *alpestris*. It also occurred in January, 1893, in small numbers.

**Spinus pinus.**—Common at Raleigh during the winters of 1884–85, 1886–87, 1887–88, 1889–90; but almost entirely absent during the winters of 1885–86, 1888–89, 1890–91, 1891–92, 1892–93.

**Ammodramus henslowii.**—A female taken at Raleigh, April 25, 1893, is our first record for this locality.

**Chondestes grammacus.**—One taken and another seen at Raleigh, Aug. 19, 1889. We also took a nest and set of four eggs, July 24, 1890.

**Zonotrichia leucophrys.**—One taken at Weaverville by J. S. Cairns, Oct. 16, 1889.

**Petrochelidon lunifrons.**—Tolerably common at Raleigh during the spring migration in 1889 and 1891.

**Clivicola riparia.**—One taken by us at Raleigh, April 25, 1888.

**Stelgidopteryx serripennis.**—Has apparently been getting rarer near Raleigh, or else has found nesting places more suited to its needs than

the old ones, for it has deserted its old haunts almost entirely, and instead of being our commonest Swallow is much more nearly our rarest one.

**Protonotaria citrea.**—Rather rare summer visitor in Bertie County; eight specimens taken from July to September, 1891; two specimens taken in 1892 (T. A. Smithwick).

**Helminthophila chrysoptera.**—One male taken at Raleigh, May 7, 1889, and another on the same date in 1891.

**Helminthophila peregrina.**—One taken at Raleigh on each of the following dates: Oct. 6 and 12, 1887; Oct. 12, 1888; Sept. 19, 1889; all were females.

**Dendroica cærulea.**—A female taken May 8, 1893, is our first spring record for this species at Raleigh.

**Dendroica palmarum hypochrysea.**—Occurs at Raleigh sparingly in the fall migration, and occasionally during the winter months, and is sometimes fairly common in the spring. I have seen this subspecies only.

**Geothlypis formosa.**—Saw an old bird feeding young near Milburnie some eight miles from Raleigh, June 27, 1890.

**Sylvania mitrata.**—Common summer visitor in Bertie County, breeding abundantly (T. A. Smithwick).

**Harporhynchus rufus.**—Resident at Raleigh, though rather rare in winter. Even during the severe winter of 1892–1893 I have seen them on a number of occasions. Very common in Bertie County in January, 1893.

**Thryothorus bewicki.**—Occurs regularly, but rarely, in winter at Raleigh. I have seen them about once a week during every winter since 1885, but never more than one at a time except on one occasion.

**Sitta canadensis.**—Irregular winter visitor at Raleigh, usually rather common; none observed during the winters of 1887–88 and 1891–92.

**Galeoscoptes carolinensis.**—Observed twice in winter at Raleigh in the past five years. Mr. T. A. Smithwick has seen a dozen or more in Bertie County during January, 1893.

**Turdus aliciæ.**—Irregular transient at Raleigh; usually from one to four are taken every year.

# FLY LINES.

BY GEORGE H. MACKAY.

'FLY LINES' and 'Lines of Flight' are so closely connected that it might seem reasonable to include them under one heading. Yet, judging from my observations of some of the water birds during their sojourn on the New England coast, I can say that Fly Lines do not convey to me the same meaning as do Lines of Flight, for the reason that the former appear to be influenced by the peculiar local surroundings and weather conditions of the locality where they occur, while I recognize as Lines of Flight those general migratory movements from north to south, and vice versa, over particular sections of the country or along certain coasts, in contradistinction to other portions where such movements do not occur. While it is true that in some instances Lines of Flight seem to change their character *temporarily* so as to very properly come under my interpretation of Fly Lines, I can scarcely say I have ever noticed Fly Lines (with one exception) to assume the definite character so distinctive of Lines of Flight during a migratory movement. I am free, however, to state, in regard to the above exception, that I have observed Scoters flying under the temporary local conditions of Fly Lines which I am certain embraced a migratory movement, as I shall have occasion to instance later on. It is of little importance, however, as far as the subject matter is concerned, whether one or both terms are considered as essential in defining such movements. Therefore permit me to use that of my title in describing what I desire to communicate, because it is the one with which I am most familiar.

The expression 'ocean lanes' is often applied to those invisible, broad, open ways traversed by the ocean steamships in passing to and from this country to Great Britain, and it seems fairly well to convey the meaning. Fly Lines are also invisible pathways, pursued not only by migratory but by sojourning water birds in New England. This unmarked temporary way is always subject to change, sometimes more than once in a day, as it is determined largely by weather conditions; but whatever the conditions,

when such a Fly Line is adopted, the birds will undeviatingly follow it, flock after flock, though no coming birds can be seen when the last flock is passing out of sight. As illustrations must necessarily be repetitions, they being much alike, I shall confine myself to only a few species out of a number which have come under my observation.

It took me a number of years to learn what Fly Lines were, or that there were such, or to recognize in them a regularity of movement under varying conditions. Afterwards I found it of great service during my shooting trips. I have heard people who had not given the subject especial attention express the view that birds in general fly aimlessly about, securing sufficient food for their daily wants, and getting out of harm's way when necessary. I can scarcely agree to such an opinion, my observations leading me to conclude that birds display a purpose in everything; it seems to me only necessary to study their habits to become convinced of this. Those who have had more or less experience as sportsmen on the coast find it not a difficult matter, in most cases, to distinguish, when far distant, species with which they are familiar by their appearance, manner of flight, and note, for each is characterized by ways and traits peculiarly its own, a knowledge of which often enables one to anticipate their movements. Notice, for example, a flock of Brant (*Branta bernicla*) gyrating in the air on some warm April or May day when the wind is southwest; does it mean anything? If you have studied them you will know that soon they will start on their line of migration, this first movement being indicative of the one which follows it. Should the early morning find you on the sea coast at the proper season and place, you will observe that the first few flocks of Scoters appear to pass in about the same line and headed in the same direction, as if moving from one definite point to another; and you will find that *this* will be their Fly Line while the same weather conditions prevail. It may seem that chance has so directed them, but wait and see, and you will become convinced that such is not the case. I have known these Scoters, when flying by the south side of Nantucket Island, at some distance from the shore, to change their course at a fixed though invisible point and turn in towards the beach at a given spot, and that all succeeding flocks would follow this line although none might be

in sight at the time the last flock passed. To many it would seem wild to wager that the next flock to appear would do likewise, yet such could be predicted with reasonable certainty, for it was their Fly Line for the time being.

I have also noticed flocks of American Golden Plover (*Charadrius dominicus*) leading along the headland on Nantucket Island, adjacent to the beach, until they reached a certain place on the shore, when their course would be abruptly changed, turning inland, without any apparent cause. At other times I have seen flock after flock lead inland and, on reaching a certain point, turn off and follow a slight, scarcely noticeable, depression in the land. As I interpret it, they pursued these courses in each instance because it was their selected Fly Line while passing from one portion of the island to another. Should they mount up into the air and circle several times, and then head south, you may say goodbye to that flock for at least a year, for they have started on their line of migration, this second movement being certain to follow the first.

Seconnet Point, Rhode Island, is separated from the Newport shore by the Seconnet River, which at its mouth is four and a quarter miles wide. I have here watched many migratory movements of the three varieties of Scoters in the spring as they passed on their lines of flight northward. When the wind is southwest, whether blowing hard or almost calm, at a certain undefined place off the Newport shore they will turn and pass on up the river for a mile or more, then again turn and come out around Seconnet Point, resuming here their regular line of flight as before. There is no apparent reason why they should adopt this out of the way course, rather than the straight one directly across the mouth of the river, which would be their direct line of flight; yet do this they will, and for the time being it seems to be their adopted Fly Line under the conditions as stated, but not otherwise. I instance this to explain what I intend to convey by lines of flight changing their character temporarily into Fly Lines. The same is true of the Golden Plover (*Charadrius dominicus*) at times when they pass over Nantucket Island without stopping. The American Crow (*Corvus americanus*), Black-bellied Plover (*Charadrius squatarola*), Knots (*Tringa canutus*), Turnstones (*Arenaria interpres*), Eskimo Curlew (*Numenius*

*borealis*), Hudsonian Curlew (*N. hudsonicus*), the Greater Yellowlegs (*Totanus melanoleucus*), Yellowlegs (*Totanus flavipes*), also some of the land birds, and many of the Ducks, as the American Eider (*Somateria dresseri*), Oldsquaw (*Clangula hyemalis*) and others, when sojourning in a locality, and at times during migration, follow a definite Fly Line.

To exactly define the Fly Line of sojourning birds is not always easy, for, as I have remarked, each day is a rule unto itself according to the prevailing weather conditions; it therefore may require a longer or shorter period of observation, but when it is known to the experienced sportsman the birds are very apt to suffer. Temporary Fly Lines which may form a part of lines of a migratory flight, as also lines of flight proper, are comparatively easy to ascertain, being in almost all instances governed by wind and weather, but not invariably so. Fly Lines of sojourning birds are not seemingly always governed by the weather conditions, the objective point sought sometimes causing exceptions by reason of location, nearness to buildings, intervening hills, etc. It might appear, on viewing some large marsh where all was apparently good ground, that one location would be as favorable as another for the birds to fly over; such a conclusion would be a mistaken one, for though it may have an area of a thousand acres there may be only two or three places that can be called *good*, for the reason that, owing to its topography, direction of wind, etc., conditions may arise which may cause Fly Lines to touch only in certain places, other portions of the marsh being passed over but little by the birds. To the inexperienced it is again merely chance which directs such movements of birds, but the close observer sees purpose, and, the cause being known, the result can be predicted.

Why is this? And what is it that causes the above results? As my explanation must necessarily be based on my individual experience, which, while it has covered a number of years on the coast, is nevertheless only the result of one person's observations, which may or may not be modified by more extensive data, I am compelled to present an explanation which is not altogether satisfying even to myself. Consequently I offer it simply as a contribution to a subject on which little thus far has been written.

It would seem, especially during inclement, windy weather, that most creatures shrink from a struggle with the elements, for a variety of reasons; as a result their movements are deflected to leeward. But such conditions are not essential, for I have noticed similar results during ordinary weather when there was but little wind, the position of the Fly Line being changed perceptibly. Such changes are apparently brought about by the wind coming from a different quarter, the Fly Line being deflected almost invariably to leeward, even though there may be scarcely wind enough to make a ripple on the water. I interpret it that the birds are enabled to fly in the direction they wish to go with greater ease by so changing their course. It would also seem that some sojourning birds, after becoming accustomed to certain localities, evince a preference for particular routes by their continuous use when passing to and from places they are accustomed to frequent, thus adopting what I designate as their Fly Line. In instances where salt water Ducks are in the habit of frequenting ponds having an opening into the ocean, they usually show a preference for passing in and out over such opening, apparently feeling safer when flying over the water. Should there be no opening they are apt to select the narrowest part of the beach separating the pond from the ocean, over which to cross, regardless of the wind. The topography of certain localities also has much to do with influencing the direction of the Fly Lines of some of the water birds when passing over the land. The American Golden Plover (*Charadrius dominicus*) especially will follow undulations, and shape its course so as to follow the depressions and valleys. These illustrations, I think, indicate that the movements of some of the water birds are not left to chance, but actuated by purpose.

It is not to be inferred that Fly Lines are easily discovered, though sought after with perseverance, for the reason that their location, favorable weather conditions, and time of flight, are usually matters of conjecture; hence unless one is a good deal in the field, as well as on the alert, instances may occur which will escape the observer's notice. In thus directing attention to the subject, and communicating what I have gleaned, I desire to assist others who may be interested in the matter by giving them the aid of my own experience.

# THE GEOGRAPHICAL DISTRIBUTION OF THE GENUS *MEGASCOPS* IN NORTH AMERICA.

BY EDWIN M. HASBROUCK.

In the earlier accounts of travel and exploration in this country the little Screech Owl is referred to by nearly every writer on natural history. In 1758 Linnæus described and named the Red Owl *Strix asio*, and it remained for many years the sole known representative of the genus *Megascops*. Later birds closely related to this species were found in various quarters of the globe, until now the genus may be said to have an almost cosmopolitan distribution.

In 1832 it was discovered that material differences existed between the birds of the eastern United States, and those from the southwest, the latter being described as the Mexican Screech Owl (*Scops trichopsis*). In 1854 a further separation occurred when the Texan form (*Scops mccallii*) was described. Since the discovery of the Texan race, ornithologists have come to recognize more and more the importance of faunal areas, and the evident relation to them of peculiar local forms. *M. asio* has been divided into so many subspecific forms that there appears to be absolutely no region left (in this country) from which a valid form is likely to be described. So complicated and so little understood is the group, that up to the present time no attempt has been made to define the geographical distribution of its numerous forms. Future data must necessarily make some changes in the details of distribution as here mapped, particularly in the case of southern species which as yet are little known, but with these exceptions it is hardly probable that any material differences will be effected.

The persent paper includes all members of the *Megascops* group known to occur north of Panama, a total number of twenty-one[1] forms, of which ten are full species, and eleven subspecies, as follows.

[1] Three forms recently described by Brewster, *aikeni*, *macfarlanei*, and *saturatus* have not as yet been admitted to the A. O. U. list of North American birds, but are included here as they appear to rest on a good basis.

Megascops barbarus (*Scl. & Salv.*).
Megascops nudipes (*Vieill.*).
Megascops cassini (*Ridgw.*).
Megascops cooperi (*Ridgw.*).
Megascops brasilianus guatemalæ *Sharpe.*
Megascops hastatus *Ridgw.*
Megascops vermiculatus *Ridgw.*
Megascops aspersus *Brewst.*
Megascops vinaceus *Brewst.*
Megascops asio (*Linn.*).
Megascops asio floridanus (*Ridgw.*).
Megascops asio mccallii (*Cass.*).
Megascops asio bendirei (*Brewst.*).
Megascops asio kennicottii (*Elliot*).
Megascops asio maxwelliæ (*Ridgw.*).
Megascops asio trichopsis (*Wagl.*).
Megascops asio aikeni *Brewst.*
Megascops asio macfarlanei *Brewst.*
Megascops asio saturatus *Brewst.*
Megascops flammeolus (*Kaup*).
Megascops flammeolus idahoensis *Merriam.*

Of these, nine are strictly Mexican and Central American.

Megascops barbarus (*Scl. & Salv.*).
Megascops nudipes (*Vieill.*).
Megascops cassini (*Ridgw.*).
Megascops cooperi (*Ridgw.*).
Megascops brasilianus guatemalæ *Sharpe.*
Megascops hastatus *Ridgw.*
Megascops vermiculatus *Ridgw.*
Megascops aspersus *Brewst.*
Megascops vinaceus *Brewst.*

While the remaining twelve are to be found within the territory of the United States, three of the latter, *Megascops asio trichopsis*, *Megascops asio mccallii*, and *Megascops flammeolus*, are found also in Mexico, leaving nine that may be considered North American in the generally accepted sense of the term.

It is a noticeable fact that, of the nine forms strictly Mexican and Central American, only one, *Megascops brasilianus guate-*

*malæ*, is a subspecific one; while on the other hand, of the nine strictly North American forms, only one, *Megascops asio*, is specific. This is possibly due to the fact that the northern birds have been more thoroughly studied than have the tropical ones, and while much work has been done in this latter region, so many localities remain to be explored that the future may show an entirely different state of affairs.

If we compare the map of distribution with the faunal areas, it will be seen that the range of several of the subspecies coincides very closely with the boundaries of certain faunas (a fact particularly noticeable in the United States), while others are distributed over an area embracing two or more, a circumstance which, viewed from the standpoint of evolution, would go to show that those forms whose range is most widely diffused are the oldest, while those circumscribed within certain life areas have become more recently differentiated.

In treating of the common Screech Owl (*M. asio*), whose wide distribution is so well known, it seems useless to mention records for every State included in its range; accordingly a general statement of distribution accompanied by outlying localities will be sufficient, more especially since the accompanying map shows the territory covered in full. With the remaining forms I shall enter more into detail.

Beginning with our own group, we have: —

### Megascops asio (*Linn.*). Common Screech Owl.

This is the most widely distributed of the group, and doubtless the oldest in North America, since the range is extended into four of the principal life areas; namely, the Austroriparian, Carolinian, Alleghanian, Canadian and portions of the Great Plains faunas. No type exists. The species is first mentioned by Catesby in 1731 from the Carolinas, and this term "the Carolinas" will forever have to suffice for type locality. It is found throughout the Eastern United States from the northern portions of South Carolina, Georgia, Alabama and Mississippi northward to southern Canada, and as far west as the central and western parts of Nebraska and Kansas, in which latter region it occurs occasionally along the timbered regions of the bottom lands. In Texas its range is somewhat obscure, inasmuch as one

specimen of a lot from Gainesville was identified as *Megascops asio* proper, and all the remainder as *mccallii*, while Bendire records it from Long Point — so far south that the record is really remarkable, as *floridanus* or *mccallii* would be the more likely forms to occur. With the exception of the Atlantic coast north of Charleston, the species does not occur below the one hundred feet contour line, from which it ranges over the whole area save the higher portions of the Alleghanies.

The following records indicate the boundaries of its distribution.

**Newfoundland** (Forest and Stream, III, 1874, 53).
**Nova Scotia.** *Pictou* (Prof. G. W. McQuarrie, personal information).
**New Brunswick.** *Newcastle* (Phillip Cox, in epist.).
**Maine.** *Calais* (Geo. A. Boardman, in epist.); *New Vineyard* and *Kingfield* (F. H. Carpenter, Orn. and Oöl., XI, 1886, 177).
**Ontario.** *Annan* (A. C. Sloam, in epist.); *Bellville* (James T. Bell, in epist.); *Ardtrea* (John Blair, in epist.).
**Michigan.** *St. Marys* (Morris Gibbs, in epist.); *Keweenaw Point*, (Kneeland, list of 1860).
**Wisconsin.** *Milwaukee Co.* (O. & O. XIV, 1889, 57); "*northern part*" (Henry Pratten, Rep. Geol. Surv. Wis. Iowa & Minn. 1852, 622).
**Minnesota.** "*Northern part*" (Henry Pratten, l. c.); *Yellow Medicine Co.*, (Albert Lane, O. & O. XIV, 1889, 57).
**South Dakota.** *Clay Co.* (G. S. Agersborg, Auk, II, 1885, 284).
**Nebraska.** *Ong* (Joel Nelson, in epist.).
**Kansas.** *Ellis* (Dr. Louis Watson, in epist.).
**Texas.** *Gainesville* (G. H. Ragsdale, in epist., on authority of W. Brewster); *Long Point* (Capt. Chas. E. Bendire, Special Bull. No. 1, U. S. Nat. Mus. 1892, 355).
**Mississippi.** *Waverly* (G. V. Young, in epist.— possibly *floridanus*).
**Alabama.** *Greensboro* (Dr. W. C. Avery, in epist.).
**North Carolina.** *Raleigh* (H. H. & C. S. Brimley, in epist.); *Oakdale* (Robert J. Thompson, in epist.); *Weaverville* (J. S. Cairns, in epist.).
**South Carolina.** *Chester* (L. M. Loomis, Bull. N. O. C. 1879, 216).

### Megascops asio floridanus (*Ridgw.*). FLORIDA SCREECH OWL.

The Florida Screech Owl is confined almost exclusively to the Austroriparian region; and while but little if any value can be attached to it as a faunal race, the fact remains that but a single record has been found within the Carolinian fauna. With the exception of this record — McPhersonville, S. C.— not

a single instance appears to be known of its occurrence at a greater elevation than five hundred feet. It is essentially a bird of the low country, although not found on the Atlantic coast farther north than about Lat. 34°, while in the Mississippi Valley it may go a trifle beyond that, but no data exist for such assumption, and its distribution across this great river basin is to a certain extent hypothetical. The type specimen of this species, deposited in the U. S. National Museum, was described from Indian River, Florida, by Ridgway in 1873. The race occurs throughout the Gulf States to about the southern limit of the preceding, or to about Lat. 33° or 34°. Just how far west it extends is uncertain, but probably to extreme eastern Texas, as it has been taken in De Soto Parish, Louisiana, just over the border. Inasmuch as the Austroriparian region extends into Texas as far west as Long. 98°, it is not improbable that *floridanus* occurs within the limits of this State.

The following are the records of its distribution.

**South Carolina.** *Charleston* (Arthur T. Wayne, in epist.); *Grahams Turnout* (specimen in U. S. Nat. Mus.); *Mount Pleasant* (spec. in coll. Wm. Brewster); *Macphersonville* (spec. in coll. Wm. Brewster).

**Georgia.** *Broro Neck* (spec. in coll. Wm. Brewster); *Macon* (spec. in U. S. Nat. Mus.); *St. Simon's Island*, *Wayne Co.*, and *McIntosh Co.* (H. B. Bailey, Bull. N. O. C. 1883, 41); *Sapelo Island* (spec. in U. S. Nat. Mus.).

**Florida.** *Gainesville* (spec. in U. S. Nat. Mus.); *Indian River* (type specimen in U. S. Nat. Mus.); *Palatka* (spec. in coll. E. M. Hasbrouck); *Caloosahatchee River* (W. E. D. Scott, Auk, IX, 1892, 132).

**Louisiana.** *New Orleans* (spec. in coll. Dr. A. K. Fisher); *Mandeville* and *De Soto Parish* (spec. in Am. Mus. Nat. Hist.).

### Megascops asio mccallii (*Cass.*). TEXAN SCREECH OWL.

The Texan Screech Owl was described by Cassin in 1854 from Texas, and if the more southern records are to be relied upon (the authority places them almost beyond doubt), the distribution is one of the most peculiar of any of the group. We first meet with it in Texas at Gainesville (an apparently exceptional record); in the vicinity of Houston; in Lee, Tom Green, and Concho Counties, as far west probably as Long. 104°. At Gainesville Mr. Ragsdale records it as uncommon, but it ap-

pears more likely from records of *trichopsis* from Eastland that the Gainesville birds are the Mexican form, but as no proof of this exists, until we have more information the record will have to stand for *mccallii*. Southward the range extends through eastern Mexico, on the basis of one or two records, to La Parada in Oaxaca, and even to the Province of Vera Paz, Guatemala, which last is undoubtedly an extra-limital occurrence. In the United States it apparently does not attain a greater altitude than 2000 feet, while in Mexico near Oaxaca and in Guatemala it is necessarily somewhat greater.

By far the greater number of records for *mccallii* would make it a bird of the Lower Sonoran region, while those from Brownsville, Texas, from Mexico and Guatemala, throw it into the Tropical fauna, its true range probably not extending farther than Oaxaca.

Following are the records.

**Texas**. *Gainesville* (G. H. Ragsdale, in epist.); *McLennon Co.* ('Elanoides,' O. & O. XV, 1890, 57); *Lee Co.* (J. A. Singley, O. & O. XII, 1887, 164); *Tom Green* and *Concho Cos.* (Lloyd, Auk, IV, 1887, 190); *Bandera Co.* (Ibis, 1865, 330); *Houston* (Rep. Miss. Val. Migra. 1888, 122); *Comal Co.*, (G. B. Benners, O. & O. XII, 1887, 65); *Nueces Co.* (spec. in coll. Wm. Brewster); *Corpus Christi* (Bull. No. 2, Ridgw. Orn. Club, 1887, 15); *Brownsville* (spec. in U. S. Nat. Mus.); *Lomita* (Bull. U. S. Geol. Surv. Terr. V, 1879, 417); *Losoya Crossing* (H. P. Attwater, O. & O. XII, 1887, 124); *Hidalgo* (Sennett, Bull. Geol. Surv. Terr. IV, 40).

**Mexico**. "*Northern Mexico*" (Lieut. Couch, spec. in U. S. Nat. Mus.); La Parada, Oaxaca (Sclater, P. Z. S. 1858, 296).

**Guatemala** (Vera Paz). *Salama* or *Cajabon* (Scl. & Salv. Ibis, I, 1859, 220).

**Megascops asio bendirei** (*Brewst.*). CALIFORNIA SCREECH OWL.

This race was separated by Brewster in 1882, and the type specimen, from Nicasio, California, is now in the Brewster collection. With the exception of its occurrence at Fort Klamath, Oregon, it is confined to California west of the Sierra Nevada range. The State is so broken up as regards life areas that it is not surprising to find it inhabiting four,— Upper and Lower Sonoran, Transition, and Boreal — the last to a limited

extent only. Rarely, if ever, is this Owl found at a greater elevation than five thousand feet, the five thousand feet contour bounding very nicely on the east the records of capture so far as known. The form found in the northwestern part of the State is somewhat questionable, it being either the present race or Mr. Brewster's recently described form *saturatus*. It is hardly probable that the last-named ranges so far south, but for the present, owing to the lack of material, the matter will have to remain in doubt.

The following are the records.

**California.** *Nicasio* (type spec. Brewster, Bull. N. O. C. VIII, 1882, 31); *San Bernardino, Poway, Santa Cruz, Alameda Co., Contra Costa Co., "the Valleys"* (Land Birds Pacif. Coast, 1890, 51); *San Francisco* (Zoe, II 1891, 167); *Santa Barbara* (C. P. Streator, O. & O. XI, 1886, 69); *Fort Crook* (Townsend, Proc. U. S. Nat. Mus. 1887, 203); *Fort Tejon* (Henshaw, Wheeler Surv. 1876, App. JJ. 226); *Marin Co., Stockton, Oakland, Riverside, Shasta*, specs. in U. S. Nat. Mus.); *Nevada City* (Proc. Bost. Soc. Nat. Hist. XVII, 1875, 365).

**Oregon.** *Fort Klamath* (Merrill, Auk, V, 1888, 146).

**Megascops asio kennicottii** (*Elliot*). KENNICOTT'S SCREECH OWL.

Not a single specimen of this bird, so far as known, has been taken since 1867, when Elliot's type (45,847, U. S. N. M.) was described from Sitka, Alaska. Numerous specimens from British Columbia, Washington, Idaho and western Montana have been referred to this race, but a recent subdivision by Mr. Brewster makes the type unique. It is of course boreal in its affinities, and probably occurs in northern British Columbia.

**Megascops asio maxwelliæ** (*Ridgw.*). ROCKY MOUNTAIN SCREECH OWL.

This was described in 1883 from a specimen sent from Boulder, Colorado, by Mrs. Maxwell, and now in the National Museum. The race is an exceedingly light colored one, frequenting the cottonwood timber along the streams and among the foothills, and appears to be confined to the Rocky Mountain region from southern Montana to central Colorado. Fort Custer, Montana, is apparently the northern limit of this form, although Bendire

(Spec. Bull. No. 1, U. S. N. M., 1892, 355) mentions a Screech Owl taken by Macoun in northwestern Manitoba which he says is "presumably referable to this race." The Rocky Mountain Screech Owl is a bird of the boreal and transition zones, and although no records are known for its occurrence in Wyoming, it undoubtedly is to be found in the central and western portions of the State. The records place it at an elevation not greater than six thousand feet, but as they are extremely scarce it is difficult to give its true vertical range, and it probably occurs in many portions of the State on the eastern slope of the Rockies.

It has been reported from the following localities.[1]

**Colorado.** *Boulder* (Mrs. Maxwell, spec. in U. S. Nat. Mus.); *Denver* (A. W. Anthony, per Bendire, Auk, 1889, 301); *Boulder* and *Larimer Cos.* (Bendire, Special Bull. No. 1, U. S. Nat. Mus. 1892, 364).

**Montana.** *Fort Custer* (Bendire, Auk, VI, 1889, 301).

### Megascops asio trichopsis (*Wagl.*). MEXICAN SCREECH OWL.

This is the earliest form distinguished from *asio*, and one of the most peculiar in distribution; being found on the peninsula of Lower California, in central Arizona and east to central Texas, and far down the Mexican plateau. Until the present year *trichopsis* was not known east of New Mexico, but recently while examining some material collected by myself in Palo Pinto County, Texas, in 1888, two Screech Owls collected on September 9 were pronounced by Mr. Ridgway to be unquestionably this form, one of them typical. A third specimen, a young bird taken at Lampasas, Texas, on July 3, 1887, also resembles *trichopsis* so much that I have no hesitation in pronouncing it to be the same. These records extend the range of *trichopsis* some three or four hundred miles to the east, making doubtful the true status of some central Texas specimens that have not undergone comparison. In Mexico the only record for this form is at

[1] Mr. L. M. McCormick, who collected in the Black Hills in Dakota the past fall (1892), reports having heard a Screech Owl on several occasions, which he was unable to secure. This is the first instance known of the occurrence of any of the genus from this region. The bird was presumably of this species.

Guanajuato, thus making extremely difficult of delineation the distribution in this country. The Mexican Screech Owl is decidedly Lower Sonoran in its affinities, but on the northern border of its range passes into the Upper Sonoran and Transition, while at Cape St. Lucas it has a tinge of the Lower Californian and Tropical life areas. It appears to range to an elevation of about seven thousand feet, Fort Wingate, New Mexico, being the highest known record in the United States. The records are as follows.

**Arizona.** *Fort Verde*, *Picacho Station*, *Casa Grande*, *Fort Lowell* (spec. in U. S. Nat. Mus.); *Tucson* (Rhoads, Proc. Phil. Acad. Nat. Sci. 1892, 116); *Fort Mojave* (Bull. U. S. Surv. Terr. VI, 1881, 241, 242); *Bill Williams Fork*,[1] *Camp 118* (P. R. R. Surv. X, 1859, No. 3, 20); *Camp Grant*,[1] *Gila River*[1] (60 m. S. of Apache), *San Pedro*[1] (Henshaw, Zoöl. Wheeler Surv. V, 1879, 406); *Fort Huachuca* (spec. in U. S. Nat. Mus.); *Oracle* (Bendire, Special Bull. No. 1, U. S. Nat. Mus. 1892, 368).

**New Mexico.** *Fort Wingate* (Spec. in U. S. Nat. Mus.).

**Texas.** *Palo Pinto Co.* and *Lampasas Co.* (spec. in coll. of E. M. Hasbrouck).

**Lower California.** *Cape St. Lucas* (spec. in U. S. Nat. Mus.); *Cardon Grande* and *El Rancho Viejo* (Bryant, Proc. Cal. Acad. Sci. Ser. 2, II, 284); *Valladares* (Anthony).

**Mexico.** *Guanajuato* (spec. in U. S. Nat. Mus.).

### Megascops asio aikeni *Brewst.* AIKEN'S SCREECH OWL.

This and the two following forms have been recently described by Mr. Brewster, and while not as yet admitted to subspecific rank, their claim to such appears to rest on sufficiently good basis to warrant their consideration in the present paper. The type specimen now in the Brewster collection was described from El Paso County, Colorado, while a record for "*mccallii*" from La Plata County I have no hesitation in referring to this race.

It is questionable if Aiken's Screech Owl occurs at any point north of Douglas County, Colorado, but it probably inhabits all the more open country along the foothills of the Rocky Moun-

[1] These specimens were originally reported as *mccallii*. Owing to the fact that the specimens from Bill William's Fork (Camp 118) were subsequently deposited in the National Museum and marked *trichopsis*, and also to the strides we have made in the knowledge of distribution, I have taken the liberty to change all Arizona records of *mccallii* to *trichopsis*. It will be readily seen from the map that it is impossible for *mccallii* to occur in Arizona.

tains south at least to central New Mexico and northeastern Arizona.[1]

*Aikeni* is unquestionably a bird of the Transition zone with little probability of its occurrence in the Boreal, since it inhabits the foothills, in which case it is probably one of the more recently differentiated members of the group. From the few records of its occurrence, it apparently is not found below five thousand or above nine thousand feet.

**Colorado.** *El Paso Co.* (Brewster, Auk, VIII, 1891, 139); *La Plata Co.* (Morrison, O. & O. XIII, 1888, 115).

**New Mexico.** *Fort Wingate* (Bendire, Special Bull. No. 1, U. S. Nat. Mus. 1892, 370).

### Megascops asio macfarlanei *Brewst.* MACFARLANE'S SCREECH OWL.

The type of this race, now in the Brewster collection, was obtained at Fort Walla Walla, Washington. To this form may be referred all Great Basin specimens of so-called *kennicottii*. It ranges probably from near the eastern foothills of the Cascade Mountains to western Montana, south to about Lat. 43°, and north into southern British Columbia. It has a vertical range of from one to probably seven thousand feet.

**Washington.** *Fort Walla Walla*, type locality (Brewster, Bull. N. O. C. VII, 27).

**Oregon.** *John Day River* (Brewster, l. c.); 20 m. S. W. *Camp Harney* (Bendire, Special Bull. No. 1, U. S. Nat. Mus. 1892, 371).

**Idaho.** *Nez Percé Ind. Res.* (spec. in Hasbrouck coll.).

**Montana.** *Hellgate* (spec. in U. S. Nat. Mus.).

### Megascops asio saturatus *Brewst.* PUGET SOUND SCREECH OWL.

With the exception of Kennicott's Screech Owl this is the extreme northwestern representative of the family in the United States, and is if anything more limited in distribution than *bendirei*. Brewster's type was described from Victoria, British Columbia, and the majority of records are from the same general region. The race is apparently boreal in its affinities, and very

[1] Bendire, Special Bull. No. 1, U. S. N. M., 1892, 370.

little thus far is known concerning it, save that it is known from Salem, Oregon, to the shores and islands of Puget Sound, and from the mainland west of the Cascades.

**British Columbia.** *Victoria* (type spec. in coll. Wm. Brewster); *New Westminster* (spec. in U. S. Nat. Mus.); *Cadboro Bay* and *Comax* (spec. in coll. Wm. Brewster).

**Washington.** *Fort Vancouver* (Suckley, 1860, given as *kennicottii*).

**Oregon.** *Salem* (Brewster, Auk, VIII, 1891, 141).

## Megascops flammeolus (*Kaup*). FLAMMULATED SCREECH OWL.

This species, the type of which is deposited in the Dresden Museum, is the most widely distributed of any of the genus inhabiting North America; its range extending over much of the country covered by both the Sierra Nevada and Rocky Mountain ranges, and like *trichopsis* extending far down the Mexican plateau. It has been taken in northern California, southeastern Arizona, in Colorado nearly to the Wyoming line, at Mount Orizaba in Mexico, and as far south as Dueñas, Guatemala. It will thus be seen that the Flammulated Screech Owl is distributed over portions of both the Upper and Lower Sonoran, Transition, (and probably portions of the Boreal), and Tropical faunas, and from the records of capture is apparently not found at a lower altitude than four thousand feet. The United States records are more in number than has been generally supposed — sixteen in all (so far as learned), of which Colorado can lay claim to eleven.

The species has been recorded from the following localities.

**California.** *San Bernardino Mts.* (spec. in U. S. Nat. Mus.); *Fort Crook* and *Big Trees* (Land Birds Pacific Coast, 1890, 51).

**Arizona.** *30 miles S. of Camp Apache* (Wheeler Surv. Rep. Orn. Spec. 1874, 135); *Mouth of Little Colorado River* (Merriam, N. Am. Fauna, No. 3, 1890, 91).

**Colorado.** *Estes Park* (spec. in U. S. Nat. Mus.); *Gold Hill* and *Idaho Springs* (Bendire, Special Bull. No. 1, U. S. Nat. Mus. 1892, 375); *Boulder* (Mrs. Maxwell, Field and Forest, 1877, 210); *Mosca Pass* (Ingersoll, Bull. N. O. C. V, 1879, 121, and Brewster, *ibid.*, VIII, 1883, 123); near *Colorado City* (Brewster, l. c.); *Fremont Co.* (Deane, Bull. N. O. C. IV, 1879, 188); Loveland (Smith, O. & O. 1891, 27—three specimens).

**Mexico.** *Orizaba Mt.* (spec. in U. S. Nat. Mus.); "*Northern Mexico*" (spec. in Am. Mus. Nat. Hist.); *Valley of Mexico, City of Mexico,* "*Western Mexico,*" and "*Mexico,*" (Sharpe, Cat. Bds. Brit. Mus. II, 1875, 106).

**Guatemala.** *Dueñas* (Sharpe, l. c.—two specimens).

**Megascops flammeolus idahoensis** *Merriam.* DWARF SCREECH OWL.

The type of this subspecies, described by Dr. Merriam from Ketchum, Idaho, remains unique, and is deposited in the collection of the U. S. Department of Agriculture.

---

Coming now to the southern members of the group, the map may be taken as an illustration of the immense amount of work to be done, and the wide fields for research that present themselves in this portion of the world. Despite the researches of Boucard, Sumichrast and the collectors of Godman and Salvin in Mexico, of Zeledon, Cherrie, Carmiol and Cooper in Costa Rica, Richmond in Nicaragua, Townsend and Wittkügle in Honduras, and Arcé in Veragua, very few specimens of Screech Owls have been secured. So far as distribution goes, it may be well to state that practically nothing is known or is it possible to find sufficient records upon which to base anything like a correct map. Some are known only from the type, others are known from a second, third and fourth specimen secured at type localities, while still others have been taken from such widely separated places, and the records are so few, that it is next to impossible to tell what the true range is. It is of course possible and highly probable that some are extremely local, as is the case with members of the Trochilidæ, but it is to be regretted that we have not sufficient records to substantiate such assumption, and we can but go by those that exist. With the exception of *aspersus* and *vinaceus* (Lower Sonoran) all are Tropical in their affinities, and in this connection nothing further will be said.

It seems peculiar that there should exist so much territory apparently uninhabited by any members of the genus — compare

the map of this region with the foregoing. In the former we had practically the whole country covered by one species or another; here, wide expanses of territory intervene between mapped areas from which no members of the group are known, and even whole political divisions are without a single representative of the genus *Megascops*.

### Megascops barbarus (*Scl. & Salv.*)

This species appears to be of restricted range, inasmuch as no records have been found outside of Guatemala. The type was taken at Santa Barbara, Vera Paz, and is now in the Sclater and Salvin collection. The following are the records.

**Guatemala**. *Santa Barbara, Vera Paz* (Scl. & Salv. P. Z. S. 1868, 56—type); Santa Barbara Mts. (Ibis, 1861, 355); road between *Coban* and *Chicsa* (spec. in U. S. Nat. Mus.); "Central Guatemala" (Ridgway, Proc. U. S. Nat. Mus. 1878, 85–117).

### Megascops nudipes (*Vieill.*).

This also is restricted, being confined to Veragua, eastern Costa Rica, and the western portion of what is now Colombia, and eastern and central Costa Rica. Arcé took specimens in both Veragua and Costa Rica; in the latter place it was quite rare in the vicinity of San José, and occurred at only high altitudes.[1]

**Costa Rica**. *San José* (Cherrie, Auk, IX, 1892, 327); *La Carpintera* and *Cenantes* (spec. in U. S. Nat. Mus.).

**Veragua**. *Calobre* (Sharpe, Cat. Bds. Brit. Mus. II, 1875, 122).

### Megascops cassini (*Ridgw.*).

So far as known the only specimens of this Owl are those in the collection of the National Museum. The type, as described by Mr. Ridgway in 1887, was taken at Mirador, Mexico, and the only remaining records are Vera Cruz and Jalapa (near Vera Cruz), from specimens in the U. S. Nat. Museum. The species appears to be confined to the country immediately surrounding Vera Cruz, and to be one of the more restricted of the group.

---

[1] Auk, Vol. IX, 1892, 327.

### Megascops cooperi (*Ridgw.*).

Like other forms of avian life recently brought to our notice, very little is known as yet of this bird. The type, now in the U. S. National Museum, was described from Santa Ana, Costa Rica, in 1878, and the only other locality from which the species is known is San José (also from a specimen in the National Museum), although Cherrie makes no mention of it in his list.[1]

### Megascops brasilianus guatemalæ *Sharpe.*

This is the most widely distributed of the Central American forms, extending from western Guatemala along the mountain ranges to central Veragua, and is the only subspecific member of the genus occurring in Central America. It is but recently (1875) that the subdivision has been made, *Megascops brasilianus* having been hitherto recognized as inhabiting this region; and while typical specimens of *guatemalæ* have been taken in Brazil (Sharpe, Cat. Brit. Mus., 1875, 112), it is generally conceded that *brasilianus* does not come within the boundaries of North America. Specimens have been recorded as follows.

**"Central America"** (Sharpe, Cat. Bds. Brit. Mus. II, 1875, 114).

**"Guatemala"** (Sharpe, l. c.—6 specimens; Am. Mus. Nat. Hist.—1 spec.). *Coban* and *Choctum* (Ridgway, Proc. U. S. Nat. Mus. 1878, 85–117); *Los Salinas* (spec. in U. S. Nat. Mus.).

**Costa Rica** (Sharpe, l. c.); *San Juan* (spec. in U. S. Nat. Mus.); *San José* (Cherrie, Auk, IX, 1892, 327).

**Nicaragua**, *Acoyapa* (Sharpe, l. c.).

**Veragua** (Sharpe, l. c.—5 specimens); *Chitra* and *Chiriqui* (Ridgway, Proc. U. S. Nat. Mus. 1878, 85–117).

### Megascops hastatus *Ridgw.*

The type of this species was described from Mazatlan, Sinaloa, Mexico, in 1887, and is deposited in the U. S. National Museum. At the present writing but one other specimen is known, also from Mazatlan. In cases of this kind it is of course impossible to give other than an assumed range, and of very limited extent.

---

[1] Auk, Vol. IX, 1892, 322–329.

*M. hastatus* probably extends from the type locality back into the mountains for a considerable distance in every direction.

### Megascops vermiculatus *Ridgw.*

Costa Rica has been said to be by far the most productive of bird life of all the Central American Republics,—a statement that does not appear overdrawn on considering a fourth species of Screech Owl in addition to the three already mentioned from that country. *Megascops vermiculatus* was described from San José in 1887, the type and one other specimen, bearing simply "Costa Rica" on the labels, being now in the U. S. National Museum. Cherrie makes no mention of it in his list (Auk, IX, 327), and the species must be either exceedingly rare or overlooked in his paper. The range has been given as central Costa Rica in the vicinity of San José.

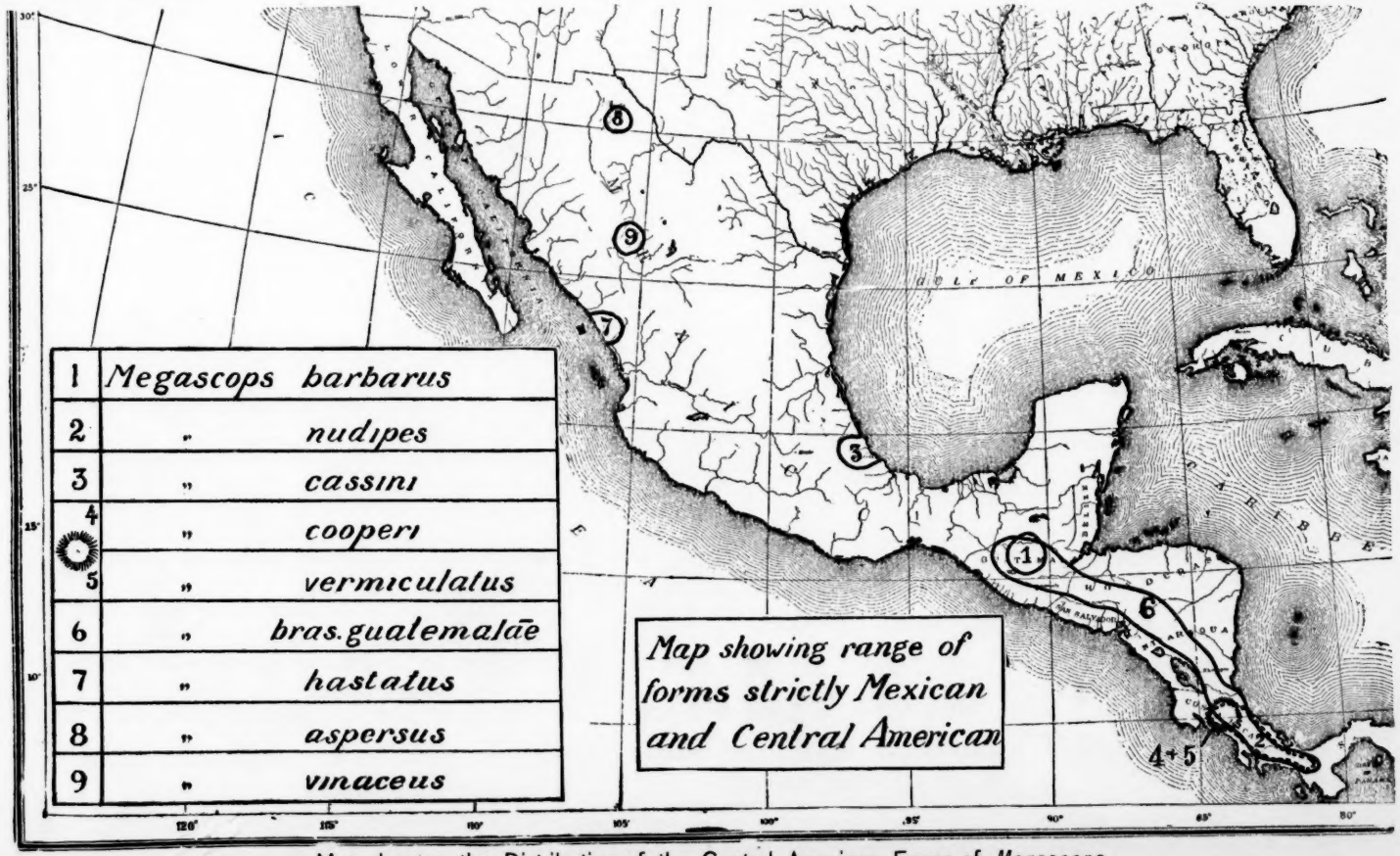
### Megascops aspersus *Brewst.* SPOTTED SCREECH OWL.

The only known specimen of this bird is in the collection of William Brewster, who described the species in 1887 from El Carmen, Chihuahua, Mexico.

### Megascops vinaceus *Brewst.* CHIHUAHUA SCREECH OWL.

Like the preceding species, nothing further is known of the Chihuahua Screech Owl beyond the type specimen taken at Durasno, Chihuahua, Mexico, and described in 1888.

Map Showing the Distribution of the North American Forms of *Megascops*.




Map showing the Distribution of the Central American Forms of *Megascops*.

# BIRD NOTES FROM LONG ISLAND.

BY WILLIAM DUTCHER.

"Betwixt th' extremes, two happier climates hold
The temper that partakes of hot and cold."

DRYDEN.

IF the English poet had had Long Island in his mind when he wrote these lines he could not have more happily described its climatic conditions. Situated midway between tropical Florida and arctic Labrador, it draws from each wanderers who find there conditions sufficiently congenial to attract them beyond the border of their habitats. The following records will show, with force, how extremes may meet and make new records or substantiate old or vague ones.

**Urinator arcticus.** BLACK-THROATED LOON.—This is the first positive record of this species on Long Island, and also in New York State, and is probably one of the very few specimens that have been taken in the United States. Mr. J. P. Giraud, Jr., does not give it in his 'Birds of Long Island,' published in 1844, although Mr. George N. Lawrence includes it in his list published in 1866, notwithstanding there is not a specimen in his collection, now in the American Museum of Natural History in New York City. In Volume X of the 'Pacific Railroad Reports,' published in 1858, Mr. Lawrence, who wrote the history of a portion of the water birds, says, "I have never been so fortunate as to meet with an American specimen of this bird." In the 'North American Birds,' by Baird, Brewer, and Ridgway it is considered "very rare, and not even positively known to occur in the United States." (Water Birds, Vol. II, p. 453.) The only United States record of which I know is of one shot in Sandusky Bay in 1880 (vide Wheaton's 'Birds of Ohio,' p. 565). It is with great pleasure, therefore, that I am able, through the kindness of M. J. Earley, Esq., of this city, to record the capture of a full-plumaged adult male. I append his letter.

New York, May 16, 1893.

*Dear Sir:*

The bird which I sent to Mr. Wallace, taxidermist, to be mounted, and which you inform me is a Black-throated Diver, was killed by Gus Merritt, of City Island, on Saturday morning, April 29, between Sands Point lighthouse and Execution lighthouse. He was one of a party of young men who left City Island in the middle of the night to lie in line for Ducks between Sands Point lighthouse and Execution lighthouse. At daylight on Saturday morning the bird flew from the east,

and was killed by him as it passed over his boat. I received it from Mr. Merritt a few days afterwards and sent it to Mr. Wallace where you saw it.

Yours, very truly,

M. J. EARLEY.

The specimen while yet in the flesh was brought to the attention of Mr. L. S. Foster by Mr. Wallace, who, after he had skinned it, gave me the body for sexing. I found the sexual organs very fully developed and the bird very fat. Most of the skeleton has been preserved, and is now in the osteological collection of the American Museum of Natural History.

**Branta nigricans**. BLACK BRANT.—The following letter from Mr. George N. Lawrence, dated September 9, 1889, is of great interest: "I send an account of a Black Brant I saw lately at Babylon. I think this is the second specimen obtained on Long Island, the other being in the Museum of the Long Island Historical Society. In the office of the Watson House I saw a fine specimen which was killed this spring in the Great South Bay. On inquiry I found it was shot by William Saxton, a noted gunner and bayman. I went to see him to get any facts concerning its acquisition that he was able to give. He said Brant were unusually plenty in the spring, and one day while lying at his decoys he saw a flock of about thirty individuals approaching, and as they were passing at a long range he fired and knocked out five. On picking them up he noticed one very black in color and of rather larger size than the others; he at once concluded it was a Black Brant, of which he had often heard his father speak, though he had never seen one. He sold it with other birds to a dealer, from whom it was purchased by Mr. Stetson."

**Tantalus loculator**. WOOD IBIS.—This species is new to Long Island, not having been included in any previous list. This specimen was brought to my attention by Mr. John C. Knoess, taxidermist, of Riverhead, who mounted it and published a note of its capture in the 'Republican Watchman' of Greenport, Suffolk Co., under date of August 16, 1890. Subsequently Mr. C. A. Schellinger, who owns the specimen, wrote me that he shot the bird June 21, 1890, in a swamp north of East Marion; it was alone and is the only one of the kind ever seen there.

**Nycticorax violaceus**. YELLOW-CROWNED NIGHT HERON.—Mr. Giraud dismisses this southern Heron with few words, merely saying, "The Yellow-crowned Heron seldom extends its visits to Long Island."[1] His statement, written in 1844, would apply today just as well, for it is only now that I am able to make my first record of this species during a period of fifteen years' collecting. Mr. A. D. Lott, one of my valued correspondents, wrote to me that a specimen of *N. violaceus* had been caught alive, in the latter part of April, in a swamp near the village of Freeport, Queens Co. He adds, "We have never seen a bird like it before."

[1] 'Birds of Long Island,' p. 281.

# NOTES ON SOME RARE BIRDS IN THE COLLECTION OF THE LONG ISLAND HISTORICAL SOCIETY.

BY WILLIAM DUTCHER.

THE Long Island Historical Society was organized at a meeting held March 3, 1863, in the rooms of the Hamilton Literary Association, by a few persons interested in local history and kindred subjects, and in the following month it was formally incorporated under its present name. Rooms were then obtained in a building located at the corner of Court and Joralomen Streets, Brooklyn, owned by the late Mr. A. A. Low. Such material as was added to the collection from time to time was exhibited there until the summer of 1880, when the Society moved to its present commodious and fire-proof building at the corner of Pierrepont and Clinton Streets. Shortly after the organization of the Society a department of natural history was instituted, and has been a valuable adjunct to the more general purposes of the institution. A small and unostentatious beginning has become the nucleus of an excellent and instructive collection of the zoölogy of Long Island, and has grown to embrace much of value of its ethnology, local antiquities, and historical relics. The work of the Society is defined in Article II of its by-laws as follows: "The object of the Society is to discover, procure, and preserve whatever may relate to general history, especially the natural, civil, literary, and ecclesiastical history of the United States, the State of New York, and *more particularly* of the counties, towns, and villages of Long Island." Later a committee consisting of Mr. Elias Lewis, Jr., Mr. J. Carson Brevoort, Mr. Henry E. Pierrepont, Prof. Chas. E. West, and Mr. Charles Congdon, was formed, whose special duties were defined as follows: "To collect, procure, and preserve whatever might illustrate the natural history of Long Island." This latter department now contains three hundred and twenty-nine well-mounted specimens and three hundred and eleven unmounted skins of Long Island birds, representing some two hundred and ninety-six species. Its collection of eggs

contains about one thousand specimens, representing one hundred and fifty-three species. The larger part of the collection represents the avifauna of Long Island although a few extra-limital species are included. The great educational and historical value of this well-housed collection shows very forcibly the good results that can be obtained by the unselfish and determined efforts of public-spirited citizens, who give not only of their time, but of their means, to build an institution that adds largely to the intellectual growth, the patriotism, and love of good citizenship of the neighborhood. The greater the number of such institutions that we have formed throughout our land the greater the benefits that we of the present generation shall bestow on those who may take up our unfinished work.

All of the specimens in the bird collection were presented to the Society by a few donors, the larger part coming from Col. Nicolas Pike, long a resident of Kings County, and always an ardent and successful sportsman, and withal an accurate and scientific field naturalist. Early in the thirties he commenced to make a collection of the birds of Long Island, which he continued for many years and finally presented to the Historical Society. In the annotations of the species, which will follow, many very interesting items of Long Island bird history will be given from his note-books.

Coincident with the early work of Col. Pike, Mr. John Akhurst established himself as a taxidermist in Brooklyn where he has followed his profession for over half a century. Nearly all the specimens in this collection were mounted by Mr. Akhurst, who beside his skill in taxidermy is also an excellent field naturalist. During a recent visit to him, Mr. Akhurst, while in a reminiscent mood, related to me many interesting incidents relative to the early history of this collection. He said for many years Col. Pike and himself collected birds and other zoölogical specimens in Kings County which was then largely wooded or occupied as farmland where now it is covered with streets and blocks of dwellings. Fulton Market in New York City was, as it is now, the depot for the sale of produce from Long Island, and the dealers there received from the professional gunners on Long Island a large number of game birds and many rare birds. There was a great rivalry between Mr. Akhurst and

the late John G. Bell of New York as to who would get the rarities, and many an early morning visit was made to the market by each in hopes that he would be the first to find and secure some new and strange specimen. Another channel through which many birds came to Mr. Akhurst was by a travelling marketman known as 'Old Jake' who twice per week travelled with a horse and wagon from Babylon to Brooklyn, a distance of forty miles, and brought to the city, for sale, game, poultry, eggs, and other country produce. Knowing that he could always find a market for rare or uncommon birds with Mr. Akhurst, he brought to him all he secured during his semi-weekly trips along the South Shore. Local gunners, of whom there were many in Brooklyn, brought to Mr. Akhurst rarities for identification, sale, or mounting. While it is difficult at this late date to establish full data for each specimen in the collection, yet, from the notebooks of Col. Pike and Mr. Akhurst's knowledge of the specimens, can be established the fact that all those annotated hereafter are from Long Island, and in many cases the exact locality and date of capture can be given. A few specimens have been contributed by other individuals whose names will appear in connection with the species. In this connection it is but just to state that the addition of a branch of natural history to the objects of the Historical Society originated entirely with Mr. Elias Lewis, Jr., and it is due to his untiring and devoted labor that this collection has attained its present size. Since its foundation he has been the honorary curator of the collection, and it is due to his care that it has been preserved in its present excellent condition. There are many gaps yet to be filled in the collection before it will be a complete representation of the avifauna of Long Island. These gaps can be filled with little difficulty, provided the necessary means are furnished the curator. It is to be hoped that civic pride will lead some individual in Brooklyn to complete the work that has been so admirably commenced by Mr. Lewis. The arrangement and nomenclature of the collection follows Mr. George N. Lawrence's list, published in 1866, but it will be re-arranged and re-labelled according to the order and nomenclature of the American Ornithologists' Union Check-List (1886 ed.) by the writer before the close of the present year. In the following annotations no mention of the commoner species will be made,

only of those that can be considered rare, or otherwise important or interesting.

**Sula sula.** BOOBY.—This specimen is in immature plumage and was mounted by Mr. Akhurst from a bird in the flesh. It is labelled: "Shot on Moriches Bay," and was presented by Mr. H. G. Reeve.

**Pelecanus erythrorhynchos.** AMERICAN WHITE PELICAN.—This specimen bears on its label the words "Canarsie Bay, presented by J. C. Brevoort." It was mounted by Mr. Akhurst who purchased the bird in the flesh with funds provided by Mr. Brevoort. No date is given.

**Anas strepera.** GADWALL.—Presented by Col. Pike, who says: "Killed in a fresh water pond near Speonk, Long Island, 1841. Formerly common."

**Aythya collaris.** RING-NECKED DUCK.—There are two specimens, male, in full breeding plumage, labelled "From south side of Long Island." Mr. Akhurst mounted both, and states that they were purchased in Fulton Market, New York City, of Messrs. A. & E. Robbins who said they came from the south side of Long Island. No date is given.

**Glaucionetta islandica.** BARROW'S GOLDEN-EYE.—This specimen was presented by Mr. Akhurst who states that it was purchased in the flesh from 'Old Jake,' who procured it from one of the gunners on the south side of Long Island. There is no date attached to the specimen, nor any locality except as above stated. This is the only specimen of this species ever procured by Mr. Akhurst.

**Histrionicus histrionicus.** HARLEQUIN DUCK.—One specimen in the collection, recorded in Auk, Vol. VI, p. 67, by George B. Badger.

**Camptolaimus labradorius.** LABRADOR DUCK.—The writer has already recorded full data regarding the specimen of the Labrador Duck in this collection. In this connection some statements by Mr. Akhurst relative to the former abundance of this now extinct Duck are of interest. During the period between 1843 and 1850 he made up a number of specimens and shipped them to England and Germany. A near neighbor of his was captain of a packet ship running between New York and England, and carried many specimens of American water fowl to collectors in England, among them at least twenty Labrador Ducks. Mr. Akhurst has no means of knowing to whom these birds were sent as they were purchased by the captain on orders. He filled a similar number of orders for Labrador Ducks for collectors in Germany, which were sent by a captain sailing from New York to some of the German ports. It is fair to assume even at this late day that some of these specimens must still be extant in Europe, presumably in private collections.

**Chen cærulescens.** BLUE GOOSE.—This specimen was presented by Col. Pike who killed it on Shinnecock Bay opposite Ponquogue, while in a blind at a place known as the 'Hole-in-the-Wall.' "There were two individuals; one I killed, and the other fell at some distance from me and I did not search for it. I consider it a very rare bird on Long Island."

**Anser albifrons gambeli.** AMERICAN WHITE-FRONTED GOOSE.—There are two specimens in the collection, one labelled "Presented by H. G. Reeve, shot on Montauk," and the other "Presented by Col. Nicolas Pike." Col. Pike says of this species: "It is very rare, and I consider it the finest game bird I have ever eaten, much superior to the Canvas-back Duck or a young Canada Goose. I have met with it but three times in my life. The first one I killed from a blind in Great South Bay in November, 1846. This is the specimen in the collection. I find in my notes that a second one was killed from a battery off Islip in 1849, March 18th. What became of this bird I do not know, unless I let Philip Brasher have it. The third and last specimen was killed by me from a shore blind where I was lying for Ducks. This was March 2, 1872. It was badly mutilated, for I killed it when close to me. It was picked and eaten and pronounced a delicious morsel."

**Branta nigricans.** BLACK BRANT.—There is an exceptionally fine specimen of this species in the collection, which was shot by Col. Pike in Great South Bay, off Islip, Long Island, in 1840. He tells me: "I had the skin some years before Mr. Lawrence described the Black Brant as a new species.[1] The late Professor Baird saw it while on a visit to my house and remarked that it was an interesting specimen; this was in 1844 when I resided in Henry Street, Brooklyn. Some years after, but subsequent to the date Mr. Lawrence separated the Black Brant, he saw my specimen and gave me its correct name. Prior to that time I had considered it only an exceptional Brant."

**Plegadis autumnalis.** GLOSSY IBIS.—Col. Pike presented this specimen, and states as follows: "I have killed this species twice on Long Island, one at Southampton on September 12, 1847, and one at Canarsie Bay on October 10, 1848. Mr. Akhurst purchased still another specimen in Fulton Market that was shot on Long Island. It was purchased by Col. Pike who presented it to Count Tipani, who took it to Italy."

**Ardea cœrulea.** LITTLE BLUE HERON.—Both are in the dark phase of plumage and are labelled "South Bay." Col. Pike's notes are as follows: "These birds were killed by me on the meadows of the Great South Bay on August 17, 1847. They were at that time frequently met with. In 1888 I passed three weeks shooting at Ponquogue, Long Island, and was surprised not to meet with them."

**Rallus crepitans.** CLAPPER RAIL.—There is a fine specimen of this common Long Island bird in albinistic plumage. There are no data with it.

---

[1] 1846. Lawrence, George N. — Description of a new species of *Anser*. By George N. Lawrence. Read March 16, 1846. Ann. Lyc. Nat. Hist. New York, Vol. IV, 1847, pp. 171, 172, plate xii, of *Anser nigricans*. Issued in Nos. 6, 7, August, 1846. 1. Anser nigricans, n. s., Egg Harbor, N. J., pages 171, 172.

**Porzana noveboracensis.** YELLOW RAIL.—Two specimens which Col. Pike killed on the meadows near Southampton, Long Island, in 1848. He says of the species: "Formerly often met with, now very scarce. Ten years ago while shooting over the same ground I did not meet with a single individual."

**Ionornis martinica.** PURPLE GALLINULE.—"Formerly very plentiful; slowly passing away. I have not seen one of these birds for many years on Long Island. The specimen in the Long Island Historical Society's collection was shot by me at Indian Pond,[1] Long Island." — (*Nicolas Pike*, MS. notes.)

**Recurvirostra americana.** AMERICAN AVOCET. — Says Col. Pike: "I have met with this bird but four times in my life, and it has always been extremely rare on Long Island. The first individual I procured near Ponquogue in 1844, and is the specimen in the collection. The second was killed in 1847 on the shore of Canarsie Bay, near where now stands the Oriental Hotel, Coney Island; I had a shooting box there. The others were killed at Southampton."

**Himantopus mexicanus.** BLACK-NECKED STILT.—Two specimens are in the collection, one labelled "Great South Bay, 1843," and the other "Great South Bay." Col. Pike says of them: "These birds were collected by me and the location is correct. Always a rare bird on Long Island; I have not seen one in my rambles for over thirty years."

**Numenius longirostris.** LONG-BILLED CURLEW.—Two specimens are in the collection, labelled "Rockaway Meadows." Of this species Col. Pike says: "I have shot hundreds of these birds, and fifty years ago they were very plentiful. On 'Foster's Meadows' I always met with them. In the last twenty-five years they seem to have disappeared, and I have not met a single individual. The location of the two specimens in the collection is all right."

**Hæmatopus palliatus.** AMERICAN OYSTER-CATCHER.—This specimen was brought to Mr. Akhurst in the flesh by 'Old Jake,' the peddler referred to before. It is labelled "South Side Meadows," and was probably shot on the Great South Beach somewhere between Fire Island Inlet and Coney Island. There is no date attached, although Mr. Akhurst says it was many years since and is the only one he ever had from Long Island. Sex not given.

[**Tympanuchus cupido.** HEATH HEN.—There is no specimen of this species in the collection. Col. Pike remembers having killed individuals of this species a number of times on Long Island — the first time in 1836. "I was making a tour on foot round the Island, collecting, and one morning while encamped at 'Comac Hills' we found our larder empty and visited the plains for game. We killed a number of these birds and made some skins of them. They were not plentiful, yet we procured all we wanted. Soon after a law was enacted for their preservation. I have not

[1] Indian Pond is at Flatlands, near the old race course. It is in the woods some distance from the Coney Island road.

met with an individual for twenty-five years in the woods or plains which I have hunted over, and I am afraid they are nearly extinct." The Heath Hen has undoubtedly been extinct on Long Island for at least half a century, and it is important, therefore, to place on record all of its life history that can now be obtained from living witnesses. Our esteemed fellow-member Mr. George N. Lawrence is one of the few living scientists who have had the privilege of seeing this species on its native heath. It is with much pleasure, therefore, that I append herewith a letter from Mr. Lawrence relative to bygone days and that extinct bird.

"*My Dear Mr. Dutcher:*

"Did you ever endeavor to trace the specimen of Pinnated Grouse which I informed you I saw at Hempstead about sixty years ago, mounted and under a glass shade? It was said to be the last example of its race on Long Island, formerly so numerous, and known to the natives as the Heath Hen.

"I think it was in the summer of 1831 that I accepted the invitation of a friend to spend a few days with him at the residence of his grandmother at Mastic for the purpose of shooting Bay Snipe in the Great South Bay. At that time the only mode of conveyance was by stage coach. We started from Brooklyn in the morning (another friend going with us), and by noon we reached Hempstead where, at the roadside tavern, while waiting in the parlor for dinner, I was interested in the specimen above alluded to; it was a fine specimen and in good condition; possibly it may be still in the possession of some member of the family.[1] At night we stopped at Patchogue and did not reach our destination until the next morning.

"The Grouse at one time were quite abundant in the scrub oaks of the middle part of the island. I remember hearing of the successful shooting of them by Mr. John Norton. One day he got in the midst of a covey, which was scattered around him in a piece of scrub oak. On shooting one, instead of securing it, he threw down some part of his wardrobe to mark the spot, first his hat, then his cravat, coat and vest; — how far he disrobed I am unable to tell, I suppose that depended upon the number of birds killed. I remember Mr. Norton very well, he was a small man and an enthusiastic sportsman. The family mansion where he resided was on comparatively high ground, just west of Far Rockaway, and bordering on the ocean. The old house was removed by the march of improvement, and the grounds in which it stood are now known by the euphonious name of Wave Crest.

"As is known by ornithologists, the Long Island bird was considered to be identical with the Prairie Hen of the West, but quite recently it has been decided by Mr. William Brewster that they are distinct species. It

[1] A visit to Hempstead to see this specimen revealed the fact that it was destroyed by fire a few years since. — W. D.

is surprising that this was not discovered sooner, as their habitats were so very different, one frequenting a dense scrub oak region and the other an open prairie country.

Yours truly,

January 20th, 1892. GEO. N. LAWRENCE."]

**Ectopistes migratorius.** PASSENGER PIGEON.—There is but one specimen in the collection; it is without data. Col. Pike contributes the following interesting note regarding the former abundance of this species and an old time recollection of shooting them within the present city limits of Brooklyn. "Near Second Place (now blocks of brown stone dwellings) there used to be a large, thickly-wooded hill; at that time (1840) this was out of town, and there were very few houses between the City Hall and it. Sportsmen used to gather at this place to shoot Wild Pigeons. In crossing Long Island the Pigeons used to take this wooded hill in their flight, to rest before they crossed at the Narrows below. I have seen thousands there, and have killed a great many at that place. They have been gradually growing less since, and for the last fifteen years I have not seen a single individual on Long Island. Just fifteen years ago I was collecting at Flatlands and I shot one, the last I ever met; I am sorry I killed it. They are gradually becoming extinct everywhere, and in a few years they will be entirely wiped out."

**Accipiter atricapillus.** AMERICAN GOSHAWK.—The collection contains two fine specimens, both of which were mounted by Mr. Akhurst. One is in immature plumage, and was presented by Mr. James A. Hewlett of Rockaway, Queens Co. No date is given. The second specimen is an adult bird, and was shot by Mr. W. Day at Bay Ridge, Kings Co. This person was a retail dealer in poultry and kept a stand in Bond Street, Brooklyn; he was very fond of a gun, and shot during the season many small birds, as Robins, Golden-winged Woodpeckers, etc., which he sold. When he shot such birds as Owls, Hawks, etc., he took them to Mr. Akhurst, who bought them to mount. There is no date given with this specimen, although Mr. Akhurst thinks it was probably shot early in the sixties. He recalls one winter about thirty years since when there was a remarkable flight of Goshawks on the Island. They were nearly all adult birds, and were so plentiful that he refused to buy them even at twenty-five cents each. He shot a number, and purchased many more, all of which he preserved and afterwards sold. He has never seen such a flight since although he has occasionally received specimens.

**Aquila chrysaëtos.** GOLDEN EAGLE.—This specimen was brought to Mr. Akhurst alive by a negro who caught the bird at Canarsie. To prevent its escape it was wrapped in a piece of old fish-net. The price paid for the bird was $5.00, which sum was furnished by the late Mr. Van Brunt Wyckoff of Bay Ridge. No date or sex is given.

"**Hierofalco Islandicus** (*Sabine*). JER. FALCON."—Recorded by Mr. George N. Lawrence[1] in his list, in the following words: "This species is

[1] Ann. Lyc. Nat. Hist., Vol. VIII, 1866, p. 280.

of rare occurence in our vicinity. A beautiful specimen, not quite adult, was most liberally presented to me by our fellow member Mr. John Akhurst, taxidermist, of Brooklyn; it was killed on Long Island in the winter of 1856." Subsequently Mr. Lawrence informed me that the specimen in the Long Island Historical collection had been presented by him and was the one referred to above.

**Strix pratincola**. AMERICAN BARN OWL.—This specimen came from Bay Ridge, Kings Co., and was purchased by Mr. Akhurst from some of the local gunners in that neighborhood. This and the following specimen were procured many years since when all that tract of country about Bay Ridge was farm or forest land, and was not occupied by dwellings as it is now.

**Surnia ulula caparoch**. AMERICAN HAWK OWL.—This is a fine specimen of this very rare Owl, and was also secured from some of the local gunners at Bay Ridge. It was brought in the flesh to Mr. Akhurst who purchased and mounted it. He thinks it all of thirty years since the bird was secured. It is the only one that ever came to his notice or possession from Long Island.

**Ceophlœus pileatus**. PILEATED WOODPECKER.—There are two specimens of this large Woodpecker in the collection, both of which were mounted from birds brought to Mr. Akhurst in the flesh. One was presented by Mr. H. G. Reeve, and the other belonged at one time to the late Mr. Philip M. Brasher. Further than that they are Long Island birds, Mr. Akhurst can give no information. He states that before the outskirts of Brooklyn were built upon, there was a large tract of forest running eastward from the Flatbush road. While there were many places in it that were denuded of trees and overgrown with under-scrub and second-growth, yet as a whole the timber was large and of the original growth. It was a very fine collecting ground, being situated at the extreme western end of the Island, and a large majority of the birds migrating over Long Island naturally sought this tract for resting and feeding. For years, in the spring and fall, Mr. Akhurst visited this place almost daily, either alone or in company with Col. Pike, and many of the rarest specimens now in the Long Island Historical collection were obtained on these excursions. During one of them Mr. Akhurst saw two Pileated Woodpeckers, but they were so extremely wild that he did not secure either of them. Being perfectly familiar with the species, he is satisfied that he was not mistaken in the identification. These four specimens are all that have ever come to his notice.[1]

**Melanerpes carolinus**. RED-BELLIED WOODPECKER.—This specimen was presented by the late Dr. H. F. Aten, of Brooklyn; there are no data connected with it. Mr. Akhurst states that during the period he was actively collecting in the tract of timber referred to above, he saw several specimens of *M. carolinus*, but for a great many years he has not found

[1] See Bull. Nuttall Ornith. Club, Vol. VI, p. 126.

any. The absence of the species probably arises from the fact that the character of the country has been entirely changed by the cutting down of the forests and the occupation of the land by dwellings and streets.

**Contopus borealis**. OLIVE-SIDED FLYCATCHER.—There is but one specimen of this species in the collection; it was presented by Mr. John D. Hicks, who procured it a number of years since near his home in Old Westbury, Queens Co. He informs me that it is the only one he recollects ever having seen.

**Corvus corax sinuatus**. AMERICAN RAVEN.—One specimen in the collection. Col. Pike says: "I never met with this bird. While shooting in 1836 at 'Comac Hill' my companion, Mr. George Bartlett, killed a fine specimen and I skinned it; it is the one in the collection. Philip Brasher had one in his collection that was killed in the woods near Prospect Park.[1] This was in 1848. These are the only specimens I have ever known to be killed on Long Island."

**Loxia leucoptera**. WHITE-WINGED CROSSBILL.—"The White-winged Crossbills in the collection were killed by me in Lotts Woods, Flatlands, in 1848. This year there seemed to be quite a flight of these birds, as many were killed. I have seen them but once since, in 1864, when I killed two near 'Cypress Hill Cemetery.' "— (*Nicolas Pike*, MS. notes.)

**Guiraca cærulea**. BLUE GROSBEAK.—This wanderer from the south was taken in May, 1843, at Canarsie. It is a very fine, adult, male specimen. Mr. Akhurst recollects having shot during his active collecting some three or four specimens of this exotic bird, and having seen a few others that he did not secure. However, it is a great many years since he has seen one.

**Spiza americana**. DICKCISSEL.—The specimen in the collection was taken by Col. Pike at College Point, Long Island, in 1841. Mr. Akhurst states that about that period 'they were very common birds, breeding freely all over Kings County, in suitable localities, especially in clover fields. He has not seen any for many years.

**Protonotaria citrea**. PROTHONOTARY WARBLER.—In April, 1888, I recorded a specimen of this Warbler which was sent to me for identification by the keeper of Montauk Light, and which I supposed was the first one that had been taken in New York State. I find, however, that as early as May, 1849, one was shot at Jamaica, Queens Co. It was a male in full breeding plumage, and was mounted by Mr. Akhurst. It is the only one he ever saw from Long Island.

**Helmitherus vermivorus**. WORM-EATING WARBLER.—Two specimens are in the collection, one presented by Mr. C. H. Baxter who secured it at Newtown, Long Island, and the other by Col. Pike who shot it in the Valley Grove Woods, now part of Prospect Park, Brooklyn. Mr. Akhurst states that during his active collecting he secured several of

[1] This specimen is now in the collection of the University of Vermont, Burlington, Vt., this institution having purchased the Brasher collection.

these Warblers from Kings and Queens Counties. Col. Pike states that he has not seen this bird for many years and always considered it rare on Long Island.

**Helminthophila ruficapilla.** NASHVILLE WARBLER.—The specimen in the collection was shot by Col. Pike in what is now Prospect Park, Brooklyn, and was mounted by Mr. Akhurst who also procured one or two specimens. Col. Pike considers them rare on Long Island.

**Helminthophila celata.** ORANGE-CROWNED WARBLER.—This specimen was shot on the East-side lands by Mr. Akhurst, and is the only one he ever procured. It is in immature plumage, and was shown to, and identified by, Mr. George N. Lawrence.

**Dendroica cærulea.** CERULEAN WARBLER.—There is a fine male specimen of this species in full breeding plumage, which Mr. Akhurst shot in the vicinity of Crow Hill, where the Kings County Penitentiary now stands. There is no date attached to the specimen, nor can Mr. Akhurst recollect when it was secured; it is the only one he ever obtained on Long Island.

**Dendroica dominica.** YELLOW-THROATED WARBLER.—This very rare specimen is a male, and was shot by Mr. Akhurst in the same locality in which he secured the Cerulean Warbler. It is the only one he ever saw on Long Island.

**Geothlypis formosa.** KENTUCKY WARBLER.—This specimen was shot by Col. Pike in Lotts Woods, Flatlands, in May. He considers them rare on Long Island, and has not seen a specimen for some years.

**Sylvania mitrata.** HOODED WARBLER.—There are two specimens of this species, both presented by Mr. Chas. H. Baxter after they had been mounted by Mr. Akhurst. Neither of them has any locality or date attached. Mr. Akhurst states positively that they were from birds brought to him in the flesh.

**Parus bicolor.** TUFTED TITMOUSE.—This specimen was also procured by Mr. Akhurst in the second growth on the East-side lands within the city limits of Brooklyn; he states that during his active collecting he saw a number of these birds. It is such a noisy species that any individuals in a locality are sure to attract the collector by their outcry.

**Polioptila cærulea.** BLUE-GRAY GNATCATCHER.—There is but one specimen in the collection, labelled "Shot by J. Akhurst, at Canarsie, in 1849." It is the only specimen that Mr. Akhurst recollects ever having seen from Long Island.

**Saxicola œnanthe.** WHEATEAR.—The Historical Society possesses but one specimen of this boreal bird. It is one of the latest additions to the collection, having been shot at Jamaica, Queens Co., in 1885 by Mr. John Pringle, a nurseryman of Brooklyn, and taken to Mr. Akhurst who mounted it. Mr Pringle stated that he saw two of these birds in company, but secured only the one presented to the Historical Society.

# NOTES ON TWO COSTA RICAN BIRDS.

BY GEORGE K. CHERRIE.

## Ramphocœlus costaricensis.

I recently published some notes on this species,[1] which I may be pardoned for repeating in this place with a few additions, as the original description of the species was published in 'The Auk' (Vol. VIII, 1891, p. 62). At that time I believed the male and female to be alike in plumage, the six specimens I then had —three males and three females— being exactly alike. However, during a recent exploring trip along the southwest coast region of Costa Rica, I was fortunate in securing a large series of specimens of this bird of both sexes and all ages. This species clearly demonstrates that the adult male *costaricensis* is distinguishable from the adult male *passerinii* only by its slightly larger size and the different wing formula. Females and young males are at a glance distinguishable from female and young *passerinii* by the bright ochraceous rufous breast and rump.

During my stay at Boruca and Palmar (the last of February) the breeding season was at its height, and I observed many of the Costa Rica Red-rumps nesting. In almost every instance where possible I collected both parents of the nests, and in the majority of cases found the males wearing the same dress as the females! In a few instances the male was in mottled plumage, evidently just assuming the adult phase, and in a lesser number of examples the male was in fully adult plumage— velvety black and crimson red.

From the above it is clear that the males begin to breed before they attain fully adult plumage, and that they retain the dress of the female until, at least, the beginning of the second year.

While on this trip I had many proofs that—in spite of its rich plumage, and being a bird of the tropics—*R. costaricensis* is well worthy to hold a place of honor among the song birds. And if the bird chooses an early hour and a secluded spot for

[1] Anales del Instituto Físico-geográfico y del Museo Nacional de Costa Rica, III, 1890, p. 135.

expressing its happiness, the melody is none the less delightful. At the little village of Buenos Aires, on the Rio Grande of Terraba, I heard the song more frequently than at any other point. Close by the ranch house at which we were staying, there is a small stream bordered by low woods and underbrush, that formed a favorite resort for the birds. Just below the ranch is a convenient spot where we took our morning bath. I was always there just as day was breaking. On the opposite bank was a small open space in the brush occupied by the limbs of a dead tree. On one of these branches, and always the same one, was the spot chosen by a Red-rump to pour forth his morning song. Some mornings I found him busy with his music when I arrived, and again he would be a few minutes behind me. Sometimes he would come from one direction, sometimes from another, but he always alighted at the same spot and then lost no time in commencing his song. While singing, the body was swayed to and fro, much after the manner of a Canary while singing. The song would last for perhaps half an hour, and then away the singer would go. I have not enough musical ability to describe the song, but will say that often I remained standing quietly for a long time, only that I might listen to the music.

### Thamnophilus bridgesi *Scl.*

*Thamnophilus bridgesi* SCL. P. Z. S. 1856, p. 141; Cat. Bds. Brit. Mus. XV, p. 194; SALV. P. Z. S. 1867, p. 144; 1870, p. 194; LAWR. Ann. Lyc. N. Y. IX, p. 107; ZELEDON, An. Mus. Nac. Costa Rica, 1887, p. 114; SALV. & GOD. Biologia, II, p. 199.

*Thamnophilus punctatus* CAB. J. f. Orn. 1861, p. 241; SALV. Ibis, 1870, p. 110; P. Z. S. 1870, p. 194; ZELEDON, An. Mus. Nac. Costa Rica, 1887, p. 114; SCL. Cat. Birds Brit. Mus. XV, p. 191; SALV. & GOD. Biologia, II, p. 198.

I have before me a series of sixty-eight specimens, thirty-eight males and thirty females. The males might be referred to *T. punctata* and the females to *T. bridgesi*, according to the original descriptions. But in four years' collecting at various points through the country I have never met with a male '*bridgesi*' nor a female '*punctata*.' I have always found the two associated together, and, in my last trip to the southwest coast, mated and

nesting. Consequently I conclude there has been some error, and that *T. punctata* should become a synonym of *Thamnophilus bridgesi*, *bridgesi* being the older name.

In Costa Rica *T. bridgesi* seems to be confined to the Pacific side of the country, and is not an uncommon bird from the coast inland to an altitude of about 2200 feet. It is only found in the densest part of the forest, and is apparently rather solitary in disposition but not especially moody nor silent. A favorite perch is on some dead branch at the edge of a thicket and from ten to twenty feet from the ground. Here the bird will sit in one position for a long time, every few moments uttering its peculiar cackling-like notes. While thus occupied the bird's attitude is very characteristic; the body is held in an almost horizontal position, the tail perpendicular, and the head thrown well back. While uttering the peculiar notes (song or cackle) the tail is vibrated back and forth quite rapidly. The food is chiefly insects, and they are sometimes taken on the wing. The bird, if disturbed, drops quietly down into the thicket.

The nest I have not yet succeeded in finding, although I have seen the birds carrying nesting material. The egg I can describe only from a badly broken specimen that I took from the oviduct of a female killed March 8, 1893. This egg was white, thickly speckled all over with small chocolate-brown spots.

There is considerable individual variation in the plumage, especially of the females, the general color below varying from a clear dusky slate-gray to a rather dark hair-brown. Some specimens have the belly lightly streaked with white, others are without any indications of streaks. Above the color varies from a blackish slate-color with a faint olive wash to a rather light bistre brown.

# NOTES ON THE TRUNK SKELETON OF A HYBRID GROUSE.

BY R. W. SHUFELDT.

ON the 15th of last January (1893), Mr. William Brewster purchased in the markets of Cambridge, Mass., a specimen in the flesh of a hybrid Grouse. He prepared the skin of it for his private collection, and placed the body of the bird in alcohol. Writing me from Cambridge upon the 13th of the following month, he offered me the latter for anatomical investigation, saying at the same time that, as far as he could ascertain, the bird "lacked wholly either testes or ovary." During the latter part of February this spirit specimen came into my possession, and in the letter of transmittal Mr. Brewster further said: "The market-man could tell me nothing as to where it had come from, save that he received it with many other Grouse (all *Tympanuchus americanus*) from a wholesale dealer in Boston."

"It is nearly intermediate in respect to color, markings, and feather development between *T. americanus* and *Pediocætes p. campestris*. It has the neck tufts (only about one inch long, however) of the former and the elongated central tail-feathers of the latter. It had evidently been snared, and killed by wringing the neck." I re-examined the specimen for sex characters (but without a lens, however) and utterly failed to find any trace of generative organs whatever. In April, through the kindness of Mr. True of the National Museum, the alcoholic, which had already been partially skeletonized by myself, was passed into the hands of Mr. F. A. Lucas, to be completed by one of his workmen. Thanks to them, the cleaned bones now lie before me for description. These consist of the femora, the shoulder-girdle (complete), the sternum, the ribs (which had all been cut in two in order to examine for sex characters), the cervico-dorsal vertebræ, the pelvis, and two (proximal ones) coccygeal vertebræ.

This trunk skeleton has several points of considerable interest about it to the ornithologist, and to me it has a special interest inasmuch as many years ago I gave it as my opinion that of all the genera of our North American Grouse, these two, *Pediocætes* and *Tympanuchus*, were the most nearly related to each other. This opinion was based upon my studies of the osteology of the entire group in this country, and it was published in the Twelfth Annual Report of the U. S. Geological and Geographical Survey (Washington, Oct., 1882, p. 700). Our hybrid specimen, now at hand, supports this view. It proves that the genera *Pediocætes* and *Tympanuchus* are so closely affined that the species are fertile *inter se*. But I know of instances among gallinaceous fowl, far more remotely related than these, where successful crosses were produced. I have seen a matured hybrid, the offspring of a common barnyard cock and a guinea hen. The bird was chiefly white in plumage and had large spurs. Mr. Smillie, the well-known photographer of the National Museum, gives me an instance that came under his own personal observation, where a domestic Mallard drake regularly paid court to a certain hen, an ordinary barnyard fowl, but he never ascertained whether any of the eggs she laid were ever placed for hatching, and consequently could not say whether they were fertilized or not.

Here I would also like to invite attention to what Mr. R. Bowdler Sharpe has said upon this point in his very interesting article on 'Ornithology at South Kensington' which appeared in 'The English Illustrated Magazine' for December, 1887. That eminent ornithologist remarks that "instances of cross-breeding in confinement are plentiful. A Goldfinch will mate with a Canary, or one species of Pheasant will interbreed with another species, but in a wild state the instances of hybridization are less frequent, and are commonly confined to game birds. The Hooded Crow (*Corvus cornix*), however, is known to breed with the Carrion Crow (*C. corone*), wherever the ranges of the two species overlap; and in the case of the birds exhibited [in the halls of the South Kensington Museum], a pure-bred Hooded Crow and a pure-bred Carrion Crow will be seen, while the hybrid young ones partake, to a greater or less degree, of the characters of both. The same occurs with the Common Goldfinch (*Carduelis carduelis*) and the Oriental Goldfinch (*C. caniceps*)" (p. 67).

So far as my observation goes, such hybrids usually stand more or less intermediate in size between the parent birds. This appears to have been the case, judging from the trunk skeleton, with the hybrid Grouse now under consideration. A few measurements will show this, and they are given in the subjoined table.

| *Adult specimens* (*Measurements in millimetres.*) | *Length of sternum* | *Length of coracoid* | *Length of scapula* | *Length of pelvis* | *Greatest width of pelvis* | *Length of femur* |
|---|---|---|---|---|---|---|
| Tympanuchus americanus | 115 | 55 | 75 | 85 | 74 | 72 |
| Hybrid | 114.5 | 48 | 70 | 72 | 59 | 66 |
| Pediocætes p. campestris | 101 | 48 | 66 | 71 | 57 | 64 |

In my osteology of the *Tetraonidæ*, above cited, I have already shown that the cervico-dorsal chain of vertebræ consists numerically of fifteen leading cervicals, if we so designate them, followed by four dorsals that are fused into one piece, and finally a single free dorsal standing between this piece and the pelvic sacrum. This is precisely the arrangement in the vertebral chain of the trunk skeleton of the hybrid Grouse we are now examining. They are characteristically tetraonine, and are each somewhat larger than the corresponding ones in the spinal column of *Pediocætes p. campestris*. But the vertebral ribs of this hybrid, with their costal ribs, are distinctly more like those of the Sharp-tailed Grouse (*Pediocætes*) than they are like the ribs in *Tympanuchus*. My Hayden memoir calls especial attention to the peculiar form of the ribs of the species of the last-named genus of Grouse, in that they, as well as the epipleural appendages they support, are markedly broad and spreading.[1] This is not nearly so much the case in *Pediocætes* nor, as I have just said, in this hybrid bird.

Passing next to the *pelvis*, we meet with a very interesting structure, to the student of the morphology of birds, and it would indeed be hard to conceive of a bone that in its form stands so directly intermediate between the pelvis of *Tympanuchus* and *Pediocætes*. This is the more easily appreciated inasmuch as in the former genus a pelvis is met with that is strikingly dif-

[1] *Osteology of the Tetraonidæ*. Hayden's 12th Annual Report, U. S. Geol. and Geograph. Surv. of the Territories, 1882, p. 680, Plate XI, figs. 79, 80.

ferent from that part of the skeleton in any other kind of North American Grouse. It is approached by the pelvis in *Pediocætes*, but not to such a marked degree as it is by the bone in this hybrid fowl.[1] Viewed laterally, the most obvious character is the remarkable manner in which, upon either side, the post-acetabular part of the ilium far over-arches the lateral surface of the pelvis and the ischiac foramen. To a very moderate extent this is apparent in the pelvis of *Pediocætes*, whereas in the hybrid we have the condition much more pronounced, but not to the extent that it is in the Prairie Hen. Again, in the latter, upon superior view of the pelvis, we note, in the post-acetabular part, that the sacrum is separated from the inner margins of the ilia by quite an interval. This is not nearly so well marked in the hybrid, while in *Pediocætes* those borders are in close contact for their entire lengths. The pubic elements are produced posteriorly, not being as short as they are in *Tympanuchus*, but more as we find them in the Sharp-tail Grouse. In all its minor characters, as I have said above, this pelvis is an exact intermediate between the pelves as they occurred in its parents. Such an observation is quite applicable, too, to the *sternum*, which appears to be just a shade off from that bone in *Tympanuchus*, but differs in one insignificant minor character in that the antero-superior produced portion of either costal process in the hybrid is somewhat lengthened, very narrow, and points directly to the front. In all, the elements of the pectoral arch or shoulder-girdle are very much alike, though the individual bones of the hybrid rather more closely simulate the corresponding ones in my skeletons of the Prairie Hens. More particularly is this the case in the form of the much expanded hypocleidium of the os furcula, this expansion being considerably narrower antero-posteriorly in *Pediocætes* than it is in *Tympanuchus* or in this hybrid. For the diameter indicated, in the last two it measures 12 millimetres, while in the Sharp-tailed Grouse it measures but 9 mm. or less.

Excepting in the matter of size, the characters of the femur of this hybrid Grouse are in exact agreement with those of the femora of the parent species. We note, however, that the calibre of its shaft is relatively, as well as actually, stouter than it is in

[1] *Loc. cit.* Plate XII, figs. 83, 84.

*Pediocætes*. Apart from this minor point, the femur of this hybrid fills the ideal place in a series of three that otherwise insensibly intergrade in all particulars.

This completes my account of the few bones that I have of the skeleton of this very interesting specimen, and in conclusion it but remains for me to thank, as I here do, Mr. Brewster for his kindness in having placed them at my disposal for description. It is fortunate that the specimen fell into such excellent hands, for we fear that with many others the fate of the body would have been quite different. I refer to that thoughtless class of ornithologists who seem to think that their science begins and ends when they have "shot a bird, skinned it, and then thrown away the characters." This is the first hybrid of this kind that has ever come under my observation, but I am inclined to believe that others, more or less like it, will be met with in the future. Were it possible to domesticate these two genera of Grouse, I believe they would frequently cross under such conditions, and very likely the vast majority of the eggs would prove to be fertile.

## RECENT LITERATURE.

**Ornithology of the Death Valley Expedition**. — Part II[1] of the report on the Death Valley Expedition, organized and carried on under authority of the U. S. Department of Agriculture in 1891 by Dr. C. Hart Merriam, Chief of the Division of Ornithology and Mammalogy, is published in advance of Part I, and consists of eight special reports, as follows: (1) Report on Birds, by A. K. Fisher, M. D.; (2) Report on Reptiles and Batrachians, by Leonhard Stejneger; (3) Report on Fishes, by Charles H. Gilbert, Ph. D.; (4) Report on Insects, by C. V. Riley, Ph. D; (5) Report on Mollusks, by R. E. C. Stearns, Ph. D.; (6) Report on Desert Trees and Shrubs, by C. Hart Merriam, M. D.; (7) Report on Desert Cactuses and Yuccas, by C. Hart Merriam, M. D.; (8) List of

[1] The Death Valley Expedition, a Biological Survey of parts of California, Nevada, Arizona, and Utah. Part II.=North American Fauna, No. 7, pp. 402, pll. xiv, frontispiece, two cuts in text, and 5 maps. U. S. Department of Agriculture, Division of Ornithology and Mammalogy. Washington, 1893. (Published May 31, 1893.)

Localites, by T. S. Palmer. Part I, not yet ready for the press, will contain "the general report (itinerary, description of the region, and discussion of life zones) and the report on the mammals."

Dr. Fisher's report on the birds is entitled 'Report on the Ornithology of the Death Valley Expedition of 1891, comprising notes on the Birds observed in southern California, southern Nevada, and parts of Arizona and Utah,' and occupies pp. 7–158. It comprises an annotated list of 290 species, all of the observations made by the different members of the Expedition being combined into one general report, instead of the principal localities being treated separately. At the end of the main list, however, are given a 'List of Birds observed in Death Valley, California' (pp. 150–152), numbering 78 species, and a 'List of the birds found in Owens Valley, California' (pp. 153–158), numbering 137 species. Both of these supplemental lists are briefly annotated, and serve to throw sharply into relief the ornithological peculiarities of these two extremely interesting localities. We are also promised that "a few local lists will be found under particular areas in Part I,"—a very wise arrangement, from the standpoint of convenience in studying the faunal aspects of particular localities.

In addition to the observations made by the main expedition, a number of side trips were undertaken to special localities, thus greatly increasing the number of species noted. "Among these trips may be mentioned one made by Dr. Merriam and Mr. Bailey, who extended their observations as far east as St. George, Utah." A trip was also made "by Mr. Nelson along the coast from San Simeon to Carpenteria, and one to Monterey by Mr. Bailey."

In this way the list is made to cover a very large area, extending from the coast of southern California eastward to some distance into Arizona. The observations appear to have been made mainly by Drs. Merriam and Fisher and Messrs. Vernon Bailey, B. H. Dutcher, E. W. Nelson, T. S. Palmer, and F. Stephens. The paper is of course an exceedingly important contribution to our knowledge of the distribution of birds over the area in question, especially as regards such previously little-known portions as Death Valley and its immediate vicinity. Outside of this area the known range of a number of species was considerably extended to the eastward or northward, according to the species. Thus the range of the Plumed Partridge (*Oreortyx pictus plumiferus*) was carried eastward to Mount Magruder in Nevada, and to the desert ranges of southern California west of Death Valley. Baird's Woodpecker (*Dryobates scalaris bairdi*) was found to range northward as far as the Santa Clara Valley in southwestern Utah, and the range of Scott's Oriole (*Icterus parisorum*) was carried equally far north.

The Texas Nighthawk (*Chordeiles acutipennis texensis*) and the Costa's Hummingbird (*Calypte costæ*) were also found to range northward to about the same line (parallel of 38°), and a single specimen of the Vermilion Flycatcher (*Pyrocephalus rubineus mexicanus*) was taken

at St. George, Utah. Especially interesting also is the finding of the Gray-crowned Finch (*Leucosticte tephrocotis*) breeding in the Sierra Nevada and White Mountains in eastern and southern California, its breeding grounds being not only previously unknown, but the genus even had not before been reported from this region. As Dr. Fisher remarks: "The knowledge that this bird breeds as stated makes its distribution in relation to the other species of the genus a little more clear." Much light was thrown also upon the habitat of Thurber's Junco (*Junco hyemalis thurberi*), which was found to breed commonly in most of the desert ranges of southeastern California, as well as in the southern portion of the Sierra Nevada.

Of the California Vulture Dr. Fisher writes: "It was with considerable surprise and pleasure that we found the California Vulture still tolerably common in certain localities west of the Sierra Nevada, in California." At San Emigdio, in Kern County, "Mr. Nelson found it quite common in October, and was told that it became very numerous there in winter."

The annotations, often quite extended, relate almost exclusively to the distribution of the species, being not at all technical and not to any great extent biographical.

While the other special papers in the 'Report' hardly call for particular remark in the present connection, it should be noted that Mr. Palmer's detailed descriptive list of the localities visited by the Death Valley Expedition is a most important and convenient adjunct to the Report, rendering it possible, in connection with the excellent map of the region traversed, to locate nearly every locality mentioned, a large number of which are for the first time indicated on any accessible map.

Dr. Merriam's notes on the distribution of the trees and shrubs, and the yuccas and cactuses, are also of special interest to zoölogists as well as botanists, aside from their more practical and general interest. "Most of the desert shrubs," say Dr. Merriam, "are social plants and are distributed in well-marked zones, the vertical limits of which are fixed by the temperature during the period of growth and reproduction. . . . The principal plant zones conform also to the animal zones, as defined by the limits of distribution of terrestrial mammals, birds, and reptiles." The limits of distribution, however, in the case of plants are much more readily traced than in the case of animals, and thus plants, and particularly trees and shrubs, serve admirably in aiding to determine natural areas of distribution. Of special interest in this connection are maps 3 and 4, giving respectively the distribution of Leconte's Thrasher (*Harporhynchus lecontei*) and the creosote bush, where at first sight the colored areas seem to be almost identical. "The creosote bush (*Larrea tridentata*) is the most conspicuous, most widely distributed, and best known bush of the torrid deserts of the southwest, where it covers the gravel soils up to a certain line, which probably marks the southern limit of killing frost" (p. 286). Map 2 illustrates the "Lower Division of the Lower Sonoran Life Zone," which is "the area in which the raising

grape may be successfully produced." As already said, the general discussion of these 'Life Zones' is to be given in Part I of the Report, which is to appear later. We have here, however, some intimation of the great importance of the results of this well-planned and most successfully executed biological survey of a region of unexcelled interest to the naturalist.—J. A. A.

**Hatch's Notes on the Birds of Minnesota.**[1]—This volume is by far the most considerable contribution to the ornithology of Minnesota that has yet appeared. All previous publications have been of the nature of briefly annotated lists or fragmentary accounts of the birds of limited areas. The present, however, is a substantial little book of 487 pages, aiming to present a formal account of the ornithology of the State as a whole. Each species is dealt with at more or less length, to some of the most interesting or important ones several pages being devoted. The general distribution within the State, manner of representation, dates of arrival and departure, habits, song, nidification, etc., are treated of in nearly all cases. The matter is presented in an attractive and entertaining style which makes the book readable and interesting to all and will serve to recommend it especially to a class of readers among whom it will largely circulate within the State where it is issued. Not a few of the histories are written in the author's most exuberant, enthusiastic, and, it may be added, fanciful strain, presenting word-pictures of a vivid and lively kind which break acceptably into the usually monotonous and unimaginative character of such writings. Some of these sketches are perhaps a little too full of sentiment and imagery, but if so it is a fault that the general reader at least will no doubt readily condone. The pages of the book are here and there marred, in the opinion of the reviewer, by the introduction of ironical or vindictive remarks directed chiefly against what are denominated "poaching collectors" "carpet concluders," "the galloping herd of itinerant ornithologists," etc., etc.; but with an occasional thrust at offenders of higher rank, some of the foremost ornithologists of the land not escaping unscathed.

Dr. Philo L. Hatch, the author of these 'Notes,' coming to Minnesota in the early days of its history and devoting himself methodically to the study of the birds from the very first, has long been looked upon as the natural and unquestioned representative of the ornithological interests of the State. In the early days he stood almost alone, and enjoyed, so far as the observation of certain groups of birds was concerned, the exceptional and never-to-be-repeated opportunities afforded by a country just emerging from a state of almost primitive wildness. He was zealous and enthusi-

[1] The Geological and Natural History Survey of | Minnesota. | — | First Report | of the | State Zoölogist, | accompanied with | Notes on the Birds of Minnesota, | By Dr. P. L. Hatch. | — | Henry F. Nachtrieb, State Zoölogist. | — | June. 1892. | — | Minneapolis: | Harrison & Smith, Printers. | 1892.—8°. pp. 487.

astic in the extreme, being always ready to sacrifice everything in the interest of the birds. Professional engagements, however numerous or pressing, had to be postponed or were forgotten when any one was encountered who could impart a new ornithological fact or who indeed but proved to be a good listener when birds were under discussion. He thus acquired a very considerable fund of information bearing upon the avian fauna of his chosen State. His first extended presentation of the results of his observations appeared in the 'Bulletin of the Minnesota Academy of Natural Sciences' for 1874, in the shape of an annotated list of the birds of the State. It was in reality more nearly a list of the birds of Hennepin County, the locality where the author resided. From time to time Dr. Hatch published additional articles in the nature of 'reports of progress' and partial revisions and corrections of the original list. At first these were printed in the Bulletins of the Minnesota Academy. Later, after his appointment to the position of State Ornithologist by the Board of Regents of the University of Minnesota, they appeared in the annual reports of the State Geological and Natural History Survey. In 1880 a second 'List' was published in the Ninth Annual Report of the Survey. The annotations were very brief, and in other respects the list was a disappointment to those awaiting its appearance. Not long after this a final and much more voluminous report was promised and the manuscript it now seems was prepared and offered for publication, but for various reasons its appearance has been delayed from time to time until now through the efforts of the present State Zoölogist, Prof. Henry F. Nachtrieb, it is presented as No. I of a series of zoölogical reports which it is intended shall be issued under the supervision of the State Zoölogical Survey. It was certainly due Dr. Hatch now that he is far advanced in years, no longer a resident of the State, and his long labors in behalf of Minnesota birds probably ended so far at least as any active participation is concerned, that the results of his work should be preserved in permanent form by the State in which he labored. The volume has appeared as 'Notes' instead of as a 'Report' upon the birds of Minnesota, and is much less pretentious and elaborate in its general make-up than was originally intended. The plan at one time, if the writer is not mistaken, included illustrations. There are none with the present book.

An analysis of the 'Notes' shows 295 species and 7 varieties formally credited to the State, and several others referred to under other headings as, for example, *Chen cærulescens* under *C. hyperborea* and *Junco hyemalis oregonus* and *Junco annectens* under *J. hyemalis*. Some fifteen species are included upon what would seem to be, in view of the unusual character of the records, insufficient data. These would have very properly formed a tentative or provisional list. They are: *Colymbus nigricollis californicus*, *Urinator arcticus*, *Larus atricilla*, *Pelecanus fuscus*, *Anas cyanoptera*, *Somateria spectabilis*, *Branta nigricans*, *Nycticorax violaceus*, *Porzana jamaicensis*, *Picoides americanus*, *Pica pica hudsonica*, *Corvus ossifragus*, *Vireo noveboracensis*, *Merula migratoria propinqua*

and *Sialia mexicana*. Several other species to which more or less particular interest attaches might perhaps be included in this list, there being a general vagueness and lack of detail in the records relating to them. Indeed it will probably be felt by the critical reader that throughout the book a little closer adherence to dry detail and a greater array of facts and positive statements might have been introduced without detracting from its literary merit, and would have much enhanced the value of the work to students of ornithology.

To be more exact, *Ammodramus caudacutus* should have been *A. c. nelsoni*, *Seiurus noveboracensis*, *S. n. notabilis* and *Quiscalus quiscula*, *Q. q. æneus*. There are several similar distinctions of more recent date and perhaps less importance that might have been made.

The following Minnesota birds find no place in the 'Notes': *Larus franklini*, *Tringa fuscicollis*, *Tringa alpina pacifica*, *Speotyto cunicularia hypogæa*, *Chordeiles virginianus henryi*, *Tyrannus verticalis*, *Leucosticte tephrocotis*, *Acanthis linaria rostrata*, *Rhynchophanes mccownii*, *Ammodramus henslowii*, *Zonotrichia intermedia* and *Seiurus motacilla*. Some of these are common and well known species with which Dr. Hatch is well acquainted and their omission is due without doubt to some neglect or oversight. Several are only stragglers, but have been conspicuously reported, the identification resting upon the capture and preservation of specimens, which it is needless to say is the only entirely satisfactory foundation for the recording of new or exceptional facts. The volume is without tables, general summaries or any description of the topography of the State. There is no discussion of the faunal areas represented within the limits of Minnesota, nor is there any reference whatever to the interesting features presented by the State as a zoögeographical area and so well exemplified in its bird life. This is the more to be regretted since the author from his long residence in the State should be exceptionally well fitted to treat this phase of the subject in an intelligent and interesting manner. The classification and nomenclature are those of the A. O. U. Check-list. Following each biographical sketch is a statement of specific characters adapted for the most part from the descriptions given in the Ninth Volume of the Pacific Railroad Survey Reports. In order to assist the many who will use the 'Notes,' who know birds only by their common names, Professor Nachtrieb has added a carefully compiled list of common names. A very good index, also prepared by Professor Nachtrieb, completes and enriches these nearly five hundred pages of bird lore, the appearance of which has been so long and expectantly looked forward to by students of Minnesota ornithology. — T. S. R.

**Rhoads's Observations on British Columbia and Washington Birds.**[1]— This paper is a final report of a collecting trip, some of the results of which have been already given in 'The Auk' (Vol. X, pp. 16–24). The

[1] The Birds observed in British Columbia and Washington during Spring and Summer, 1892. By Samuel N. Rhoads.—Proc. Acad. Nat. Sci. Phila., 1893, pp. 21–65.

author was in the field from March to September, passing the first three months at five places in the neighborhood of Puget Sound and the Straits of Georgia, and spending the rest of the time in the interior of British Columbia where he made short visits to nine different points widely unlike in their climatic conditions. In an introduction of a few pages each locality is briefly described, and some generalizations are given in regard to the distribution, and causes of distribution, of British Columbia birds. Some of these conclusions—though founded largely on conjecture—are stated with the positiveness of established facts, and, with other sweeping statements that appear here and there through its pages, suggest—what seems to be the principal fault in the paper—a certain lack of care and thoroughness in its preparation.

In one of the opening paragraphs Mr. Rhoads remarks that "the bibliography of Washington and British Columbia ornithology is very meagre," and his own knowledge of its literature unhappily appears to be so, to judge from the long array of species which he proceeds to add to the list of birds known to occur in each of these districts. Readers who have been more fortunate than he in their bibliographical researches will hardly be surprised to find that about half of these "additional species" have been recorded before, but they may wonder at the carelessness which enables the author to swell his British Columbia list with species mentioned by Chapman and Fannin (whose recent paper he does refer to), and even to "add" to the Washington record two birds whose type specimens undoubtedly came from that State. The latter are *Dryobates p. gairdnerii* and *Chætura vauxi*, while among other species that are wrongly given as novelties in one or the other list are *Colymbus holbœlli*, *Brachyramphus marmoratus*, *Larus californicus*, *Larus brachyrhynchus*, *Lophodytes cucullatus*, *Spatula clypeata*, *Aix sponsa*, *Aythya americana*, *Anser albifrons gambeli*, *Fulica americana*, *Totanus flavipes*, *Oreortyx pictus*, *Cathartes aura*, *Circus hudsonius*, *Falco columbarius suckleyi*, *Asio wilsonianus*, *Bubo virginianus subarcticus*, *Glaucidium gnoma*, *Cypseloides niger*, *Pica pica hudsonica*, *Agelaius phœniceus*, *Progne subis*, *Sitta canadensis*, and *Parus atricapillus occidentalis*.

The main body of the paper is a list of the birds seen during the trip. By covering so much and such varied ground, by great activity in the field, and by inspection of the local collections that came in his way, Mr. Rhoads has been able to include a remarkably large number of species, in all (reckoning in subspecies) 260. In dividing his time between so many localities his object appears to have been to make a comparative study of the faunal peculiarities of the different parts of the territory included in British Columbia. This purpose is one whose fulfilment is greatly to be desired, but it seems doubtful whether the limited opportunities furnished by one season's work of a single observer—even as energetic and tireless an explorer as Mr. Rhoads—might not have been devoted more profitably to a more thorough investigation of the fauna of

some one of the interesting localities he visited. Nevertheless there are a great many scattered items—too many indeed for individual mention of any of them here—that are of interest and that add largely to our knowledge especially concerning details of distribution of some of the species.

In regard to the status of several subspecies the author reaffirms his opinions given in the article above referred to. In some of these cases—*Corvus caurinus*, for example—he appears to be right, but there are others where his conclusions are not so happy. Such forms, for instance, as *Melospiza lincolni striata* and *Sylvania pusilla pileolata* show characters that even one who runs at Mr. Rhoads's hasty pace may easily read, and there are other cases of subspecies entered on the list that make one wonder whether all his identifications would be sustained were the collections on which they are based to be carefully studied by some more experienced ornithologist. In fact he runs atilt at more than one long-accepted conclusion in such a light-hearted spirit that it is hard to avoid suspecting him of superficiality in his investigations, a suspicion that—in two cases at least—is by no means allayed by Mr. Brewster's recent determinations (antea, pp. 236–237) of some material from the same region.—C. F. B.

**Minor Ornithological Publications. — 'Shooting and Fishing.'** — The following record (Nos. 2518–2610) includes all the ornithological articles of importance in the first thirteen volumes (May, 1885–April 20, 1893) of 'Shooting and Fishing.' This journal, which is published in Boston, was first issued under the title of 'The Rifle'; the present name was assumed in No. 5 of Vol. 4.

2518. *A Specimen of Hutchins Goose.* By Ben Bent [ = Frank S. Pinckney]. '*Shooting and Fishing*,' Vol. 5, No. 7, Dec. 13, 1888, p. 134.

2519. *That Last Woodcock.* By Snap Shot. *Ibid.*, Vol. 6, No. 18, Aug. 29, 1889, pp. 352–353. — At Calais, Maine, Nov. 20.

2520. *Observations on the Fall Flight of Woodcock. — 1889.* By C. A. B. [ramble]. *Ibid.*, Vol. 7, No. 5, Nov. 28, 1889, p. 89.

2521. *Snipe in December.* By R. Greenwood [ = A. C. Gould]. *Ibid.*, No. 9, Dec. 26, 1889, p. 174.

2522. *Habits of the Ruffed Grouse.* By Small Shot. *Ibid.*, No. 14, Jan. 30, 1890, p. 273.

2523. *Ways of the Ruffed Grouse.* By Paul Pastnor [ = James Buckham]. *Ibid.*, No. 15, Feb. 6, 1890, pp. 292–293.

2524. *The Woodcock in Nova Scotia.* By Edward Jack. *Ibid.*, No. 17, Feb. 20, 1890, pp. 332–333.

2525. *Some Notes on Woodcock.* By Paul Pastnor [ = James Buckham]. *Ibid.*, p. 333.

2526. *Notes on Woodcock.* By Saint Croix [ = C. A. Bramble]. *Ibid.*, No. 21, March 20, 1890, p. 413.

2527. *The Food of Woodcock.* By William Couper. *Ibid.*, No. 23, April 3, 1890, p. 458.

[**Shooting and Fishing.**—Continued.]

2528. *The Food of Woodcock.* By Saint Croix [ = C. A. Bramble]. *Ibid.*, No. 25, April 17, 1890, p. 488.

2529. *Brant Shooting at Cape Cod — Spring, 1890.* By W. Hapgood. *Ibid.*, Vol. 8, No. 2, May 8, 1890, p. 28.

2530. *The Food of Woodcock.* By William Couper. *Ibid.*, pp. 32–33.

2531. *The Food of Woodcock.* By Saint Croix [ = C. A. Bramble]. *Ibid.*, No. 4, May 22, 1890, p. 70.

2532. *Where Black Ducks Breed.* By Saint Croix [ = C. A. Bramble]. *Ibid.*, No. 6, June 8, 1890, p. 112.

2533. *The Food of Woodcock.* By Wm. Couper. *Ibid.*, No. 7, June 12, 1890, pp. 131–132.

2534. *Sheldrake Should be Exterminated.* By St. Croix [ = C. A. Bramble]. *Ibid.*, No. 8, June 19, 1890, p. 146.

2535. *Notes from Plymouth, Mass.* By Gulch [ = Herbert W. Bartlett]. *Ibid.*, pp. 146–147. — Contains a note on *Ectopistes migratorius.*

2536. *Shore Bird Shooting on the New England Coast.* By Fletcher Osgood. I, *ibid.*, No. 21, Sept. 18, 1890, pp. 412–413; II, *ibid.*, No. 22, Sept. 25, 1890, pp. 430–431; III, *ibid.*, No. 23, Oct. 2, 1890, pp. 470–471; IV, *ibid.*, No. 25, Oct. 16, 1890, pp. 491–492 [*Treats of Totanus flavipes, T. melanoleucus,* and *Macrorhamphus griseus*]; V, *ibid.*, No. 26, Oct. 23, 1890, pp. 513–514 [*Charadrius dominicus* and *Numenius borealis*]; VI, *ibid.*, Vol. 9, No. 1, Oct. 30, 1890, p. 12 [*Limosa hæmastica, L. fedoa,* and *Tringa maculata*]; VII, *ibid.*, No. 4, Nov. 20, 1890, pp. 71–72 [*Symphemia semipalmata, Charadrius squatarola,* and *Tringa canutus*]; VIII, *ibid.*, No. 7, Dec. 11, 1890, p. 134 [*Arenaria interpres, Numenius hudsonicus,* and *N. longirostris*]; IX, *ibid.*, No. 8, Dec. 18, 1890, pp. 149–150 [*Bartramia longicauda, Ægialitis vocifera, Charadrius squatarola, C. dominicus, Totanus melanoleucus, Bartramia longicauda* and *Numenius borealis*]; X, *ibid.*, No. 12, Jan. 15, 1891, pp. 231–232 [*Hæmatopus palliatus, Recurvirostra americana, Himantopus mexicanus, Limosa fedoa, L. hæmastica, Symphemia semipalmata, Numenius longirostris* and *N. hudsonicus*]; XI, *ibid*, No. 16, Feb. 12, 1891, p. 308 [*Ægialitis vocifera, Arenaria interpres, Macrorhamphus griseus, Tringa maculata, T. canutus, Totanus flavipes*]; XII, *ibid.*, No. 21, March 19, 1891, pp. 409–410 [*Ægialitis semipalmata, Æ. meloda, Phalaropus tricolor, P. lobatus, Crymophilus fulicarius, Micropalama himantopus, Ereunetes pusillus, Tringa minutilla,* and *T. bairdii*]; XIII, *ibid*, No. 22, March 26, 1891, pp. 431–432 [*Tringa fuscicollis, T. maritima, T. alpina pacifica, T. ferruginea, Calidris arenaria, Totanus solitarius, Actitis macularia, Tryngites subruficollis,* and *Pavoncella pugnax*]. — An important series of articles, containing valuable original matter. The earlier parts are not ornithological, but for the sake of completeness they are included in this record.

2537. [*Woodcock about Manchester, New Hampshire*]. *Ibid.*, Vol. 9, No. 4, Nov. 20, 1890, pp. 72–73. — From the 'Manchester Mirror and American.'

[**Shooting and Fishing.**—Continued.]

2538. *Turnstone Plover.* By G. [= Herbert W. Bartlett]. *Ibid.*, No. 9, Dec. 25, 1890, p. 178. — *Arenaria interpres* on Cape Cod, Mass.

2539. *Turnstone Plover.* By C. T. Canterbury. *Ibid.*, No. 10, Jan. 1, 1891, p. 197.

2540. *The Turnstone Again.* By Fletcher Osgood. *Ibid.*

2541. *Notes on Shore Birds.* By R. H. Blain. *Ibid.*, No. 11, Jan. 8, 1891, p. 211. — *Ægialitis vocifera.*

2542. *Gunlock to Prof. Osgood.* By Gunlock [= C. T. Canterbury]. *Ibid.*, No. 14, Jan. 29, 1891, p. 274. — Notes on several Massachusetts shore birds.

2543. *To "Gunlock".* [By Fletcher Osgood.] *Ibid.*, No. 16, Feb. 12, 1891, pp. 312–313. — Reply to the last.

2544. *The Brant Have Arrived.* By Gunlock [= C. T. Canterbury]. *Ibid.*, No. 17, Feb. 19, 1891, p. 326. — At Chatham, Mass.

2545. *New England Shore Birds.* By Gunlock [= C. T. Canterbury]. *Ibid.* — *Tringa maculata* and *Totanus flavipes.*

2546. *The "Monomoy" Brant Shooter. Ibid.*, No. 21, March 19, 1891, p. 413.

2547. *A Specimen of the Labrador Duck. Ibid.*, No. 22, March 26, 1891, p. 425.

2548. *The Valley Quail of Southern New Mexico.* By W. *Ibid.*, No. 24, April 9, 1891, p. 471. — *Callipepla gambeli* (?).

2549. *Early Dates for Woodcock.* By M. P. [and the editor]. *Ibid.*, No. 25, April 16, 1891, p. 491. — In Maine and Massachusetts.

2550. *The Upland Plover.* By O. W. Hard. *Ibid.*, No. 26, April 23, 1891, p. 508.

2551. *Water-fowl Shooting in New England.* By Fletcher Osgood. Part I, *ibid.*, Vol. 10, No. 1, April 30, 1891, pp. 6–7 [*Anas boschas* and *Anas obscura*]; part II, *ibid.*, No. 3, May 14, 1891, p. 46 [*Anas obscura*]; part III, *ibid.*, No. 5, May 28, 1891, pp. 90–91 [*Anas obscura*]; part IV, *ibid.*, No. 7, June 11, 1891, pp. 130–131 [*Anas obscura*]; part V, *ibid.*, No. 9, June 25, 1891, pp. 170–171 [*Anas strepera*, *Anas americana*, and *Dafila acuta*]; part VI, *ibid.*, No. 19, Sept. 3, 1891, p. 370 [*Dafila acuta*].

2552. *Passenger Pigeons.* By A. N. Cheney. *Ibid.*, Vol. 10, No. 2, May 7, 1891, p. 36. — Near Glen Falls, N. Y.

2553. *The Wild Pigeon in Massachusetts.* By H. [= Reuben Harwood]. *Ibid.*, No. 3, May 14, 1891, pp. 46–47.

2554. *Brant Shooting at Chatham, Mass. Spring*, 1891. By W. Hapgood. *Ibid.*, No. 4, May 21, 1891, p. 70.

2555. *Shore Birds at Chatham, Mass.* By Gunlock [= C. T. Canterbury]. *Ibid.*, No. 6, June, 4, 1891, p. 107.

2556. [*Charadrius squatarola and Totanus melanoleucus at Chatham, Mass.*]. By Gunlock [= C. T. Canterbury]. *Ibid.*, No. 10, July 2, 1891, p. 197.

2557. *Shore Bird Shooting.* By Gunlock [= C. T. Canterbury] and Shorebird [= A. C. Gould]. *Ibid.*, No. 14, July 30, 1891, p. 268. — At Chatham, Mass.

[**Shooting and Fishing.**—Continued.]

2558. *Notes from Maine.* By L. [ = L. Lewis]. *Ibid.*, pp. 271–272. — Water birds at Egg Rock near New Harbor, Maine.

2559. *My Summer Outings.* By Ralph Greenwood [ =A. C. Gould]. *Ibid.*, No. 17, Aug. 20, 1891, pp. 326–327, No. 18, Aug. 27, 1891, pp. 349–350.

2560. [*Shore Birds at Chatham, Mass.*]. By Gunlock [ = C. T. Canterbury]. *Ibid.*, No. 17, Aug. 20, 1891, p. 335.

2561. *Cape Codiana.* By Fletcher Osgood. *Ibid.*, No. 23, Oct. 1, 1891, pp. 449–450. — Mention of *Mimus polyglottos.*

2562. *The Wild Pigeon.* By Swain. *Ibid.*, p. 450. — At Greenfield, New Hampshire.

2563. *Game Notes.* By Old Gunner, G., and the editor [all = A. C. Gould]. *Ibid.*, No. 25, Oct. 15, 1891, p. 496. — Contains notes on *Limosa hæmastica*, *Charadrius squatarola*, and *Aix sponsa.*

2564. *Enemies of the Grouse.* By R. S. F [oss]. *Ibid.*, No. 26, Oct. 22, 1891, pp. 509–510. — *Bonasa umbellus togata.*

2565. *Woodcock Shooting in New England.* Editorial. *Ibid.*, Vol. 11, No. 1, Oct. 29, 1891, p. 5. — Migration.

2566. *The Migration of Grouse.* By M. G. *Ibid.*, pp. 9–10. — *Bonasa umbellus.*

2567. *Flight of the Ruffed Grouse.* By Ruffed Grouse. *Ibid.*, No. 2, Nov. 5, 1891, pp. 32–33. — Other habits also.

2568. *Scarcity of Grouse.* Editorial. *Ibid.*, No. 3, Nov. 12, 1891, pp. 45–46. — *Bonasa umbellus.*

2569. *Where are the Grouse?* By New England. *Ibid.*, No. 4, Nov. 19, 1891, pp. 70–71.

2570. *Scarcity of Ruffed Grouse.* By Taxidermist. *Ibid.*, p. 72. — See also p. 73.

2571. *Hybridism, Albinism, and Melanism.* By M[anly Hardy]. *Ibid.*, No. 6, Dec. 3, 1891, p. 106.

2572. [*Wild Turkey in Michigan.*] By M. L. *Ibid.*, p. 107.

2573. *The Game Season of 1891.* Editorial. *Ibid.*, No. 8, Dec. 17, 1891, p. 145. — *Bonasa umbellus* especially.

2574. *Some More Ruffed Grouse Notes.* By F. W. L. *Ibid.*, No. 10, Dec. 31, 1891, p. 187.

2575. *Check List of the Game Birds of North America.* By Frank A. Bates. *Ibid.*, No. 12, Jan. 14, 1892, pp. 229–230; No. 13, Jan. 21, 1892, pp. 251–252; No. 14, Jan. 28, 1892, p. 269; No. 19, March 3, 1892, p. 366; No. 20, March 10, 1892, pp. 390–391; No. 25, April 14, 1892, pp. 491–492; Vol. 13, No. 23, March 30, 1893, pp. 464–465; No. 26, April 20, 1893, p. 524. — A brief description is given of each species, and a short statement of its distribution and habits.

2576. *Woodcock in Confinement.* Editorial. *Ibid.*, Vol. 11, No. 25, April 14, 1892, p. 488.

2577. *Brant Shooting at Cape Cod.* By G. H. [ = A. C. Gould]. *Ibid.*

[**Shooting and Fishing**.—Continued.]

2578. *Boston Notes.* By Gleaner [ = A. C. Gould]. *Ibid.*, Vol. 12, No. 1, April 28, 1892, p. 8. — Notes on various birds in eastern Massachusetts, including *Passerella iliaca*, *Numenius longirostris*, *Macrorhamphus griseus*, and *Ionornis martinica*.

2579. *Brant Shooting at Chatham, Mass.* By G. E. N. [ = A. C. Gould]. *Ibid.*, p. 13.

2580. *Brant Shooting at Monomoy, Spring, 1892.* By W. Hapgood. *Ibid.*, No. 4, May 19, 1892, p. 65.

2581. *The Moulting Woodcock.* By Ignorance [ = W. W. Castle]. *Ibid.*, p. 66.

2582. *Habits of the Woodcock.* By H. Austen. *Ibid.*, No. 5, May 26, 1892, p. 85.

2583. *Remarkable Flight of Phalaropes at Chatham, Mass.* By G. E. N. [ = A. C. Gould]. *Ibid.*, p. 86. — See also Auk, IX, 296, 298, 299.

2584. *A May Morning on Chatham Flats.* By Shore Bird [ = N. E. Gould]. *Ibid.*, No. 6, June 2, 1892, pp. 105–106.

2585. [*Moulting Woodcock.*] By F. [ = R. S. Foss]. *Ibid.*, p. 106.

2586. *The Moulting Woodcock.* By "Y" [ = Charles Francis Hardy]. *Ibid.*, No. 7, June 9, 1892, p. 125.

2587. *The Woodcock Nesting.* By E. Sprague Knowles. *Ibid.*, No. 13, July 21, 1892, p. 246. — With illustrations from photographs.

2588. *Chatham Items.* Editorial. *Ibid.*, p. 251. — *Charadrius dominicus*, *C. squatarola* and *Macrorhamphus griseus*.

2589. *Sportsmen of Massachusetts.* By John Fottler, Jr., Henry J. Thayer, Edw. E. Hardy, Edw. Brooks, and Outram Bangs. *Ibid.*, No. 14, July 28, 1892, p. 265. — Circular in regard to the introduction of game birds into Massachusetts, giving statistics of their work.

2590. *Greenwood's Gleanings.* By R. G. [ = A. C. Gould]. *Ibid.*, No. 18, Aug. 25, 1892, pp. 345–346. — Notes on *Camptolaimus labradorius*, *Tringa ferruginea*, and *Tryngites subruficollis*.

2591. *Shore Bird Shooting in Massachusetts.* By Ralph Greenwood [ = A. C. Gould]. *Ibid.*, No. 19, Sept. 1, 1892, pp. 365–366. — Notes on a number of species occurring at Chatham.

2592. *Food Habits of Hawks and Owls in Maryland.* By H. H. Miller. *Ibid.*, p. 366.

2593. *Upland Plover Shooting in Vermont.* By Ralph Greenwood [ = A. C. Gould]. *Ibid.*, p. 372.

2594. *Greenwood's Gleanings.* By Ralph Greenwood [ = A. C. Gould]. *Ibid.*, No. 23, Sept. 29, 1892, pp. 455–456; No. 25, Oct. 13, 1892, pp. 492–494. — Notes on *Bonasa umbellus* and *Philohela minor*.

2595. *Late Flight of Swallows.* By W. Hapgood. *Ibid.*, No. 25, Oct. 13, 1892, p. 495.

2596. *The Gambel's Partridge in Massachusetts.* By Henry J. Thayer. *Ibid.*, Vol. 13, No. 1, Oct. 27, 1892, p. 10.

2597. *Hunting Notes from Maine.* By Sumner L. Crosby. *Ibid.*, p. 11. — *Philohela minor* at Bangor.

[**Shooting and Fishing**.—Continued.]

2598. *Ruffed Grouse.* By H. [ = Manly Hardy]. *Ibid.*, No. 5, Nov. 24, 1892, p. 85.

2599. *Upland Plover Shooting.* By Paul Pastnor [ = James Buckham]. *Ibid.*, p. 87.

2600. *Greenwood's Gleanings.* By Ralph Greenwood [ = A. C. Gould]. *Ibid.*, No. 6, Dec 1, 1892, pp. 108–110. — Notes on *Philohela minor* and *Bonasa umbellus*, p. 109.

2601. *Food of Woodcock.* By J. W. G. D. *Ibid.*, No. 7, Dec. 8, 1892, p. 129.

2602. *The Upland Plover.* By John G. Smith. *Ibid.*

2603. *The Weight of Ruffed Grouse.* By H. [ = Manly Hardy]. *Ibid.*

2604. *Winter Hunting in Canada.* By E. T. D. Chambers. *Ibid.*, No. 8, Dec. 15, 1892, pp. 147–149. — Notes on *Lagopus lagopus*, p. 147.

2605. *Greenwood's Gleanings.* By R. G. [ = A. C. Gould]. *Ibid.*, No. 13, Jan. 19, 1893, pp. 262–263. — Ducks at Chatham, Mass., in winter, p. 263.

2606. *Winter Notes from Plymouth, Mass.* By 'Repeater' [ = Herbert W. Bartlett]. *Ibid.*, No. 15, Feb. 2, 1893, p. 302.

2607. *Greenwood's Gleanings.* By Ralph Greenwood [ = A. C. Gould]. *Ibid.*, pp. 304–305. — Winter birds at Chatham, Mass., and notes on *Colinus virginianus*, p. 305.

2608. *Notes from Ohio.* By C. E. S. *Ibid.*, No. 23, March 30, 1893, p. 461. — *Haliæetus leucocephalus.*

2609. *Greenwood's Gleanings.* By Ralph Greenwood [ = A. C. Gould]. *Ibid.*, pp. 465–466. — Notes on *Aquila chrysaëtos* in Colorado, p. 465.

2610. *New York and Vicinity Shooting Notes.* [By Jacob Pentz.] *Ibid.*, No. 24, April 6, 1893, pp. 487–490. — *Quiscalus quiscula*, p. 489. —C. F. B.

**Publications Received.**—**Bocage**, J. V. Barboza du. (1) Additions et Corrections a l' "Ornithologied 'Angola." (Jorn. de Scien. Math. Phys. e Nat. da Acad. Scien. de Lisboa, 2d Ser., No. VIII, 1892, No. IX, 1893.) (2) Note sur deux Oiseaux nouveaux de l'Ile Anno-Bom. (Ibid., No. IX, 1893.)

**Collett**, R. (1) On a Collection of Birds from Tongoa, New Hebrides. (Christ. Vid.-Sels. Forh. 1893, No. 13.) (2) Das Leben der Vögel im Arctischen Norwegen. (Compte Rendu Séc. Congress Orn. Int. Budapest, 1891.)

**Dresser**, H. E. On *Acredula caudata* and its Allied Forms. (Ibis, April, 1893.)

**Meyer**, A. B. (1) *Goura beccarii huonensis* n. subsp. (Orn. Jahresb., April, 1893.) (2) *Aquila rapax* (Temm.) von Astrachan, nebst Bemerkungen über verwandte Formen, besonders *Aquila bocki* Hom. (Abh. Gesell. 'Isis' in Dresden, No. 11, 1892.)

**Piers**, Harry. On the Nidification of the Winter Wren in Nova Scotia. Trans. Nova Scotia Inst. Sci. 2d Ser. Vol. I, pp. 203–207.)

**Reichenow**, Anton. (1) Die von Herrn Dr. Fr. Stuhlmann in Ostafrika gesammelten Vögel. (Jahrb. Hamburgischen Wiss. Anstalten, X, 1893.) (2) *Glaucidium sjostedti* n. sp. von Kamerun. (Orn. Jahresb., April, 1893.)

**Ridgway**, R. Description of two supposed New Species of Swifts. (Proc. U. S. Nat. Mus. XVI, pp. 43, 44.)

**Shufeldt**, R. W. (1) On the Classification of the Longipennes. (Am. Nat., March, 1893, pp. 233–237.) (2) Comparative Osteological Notes on the Extinct Bird *Ichthyornis*. (Journ. Anat. and Phys. XXVII, pp. 336–342.) (2) Ridgway on the Anatomy of the Hummingbirds and Swifts. —A Rejoinder. (Am. Nat., April, 1893, pp. 367–371.)

**Actes** de la Soc. Scient. du Chili, II, 3ème livr., Feb., 1893.

**American** Journ. Sci., April–June, 1893.

**American** Naturalist, April–June, 1893.

**Annals** of Scottish Natural History, April, 1893.

**Bulletin** British Orn. Club, Nos. 7–9, March–May, 1893.

**Canadian** Record of Science, V, No. 5, 1892.

**Forest** and Stream, XL, Nos. 12–23, 1893.

**Journal** Cincinnati Soc. Nat. Hist., XVI, No. 1, April, 1893.

**Naturalist**, Month. Journ. Nat. Hist. for North of England, Nos. 213–215, April–June, 1893.

**North** American Fauna, No. 7, May, 1893.

**Observer**, IV, Nos. 4–6, April–June, 1893.

**Ornithologisches** Jahrbuch, IV, Heft. 2, 3, 1893.

**Ornithologisches** Monatsberichte, I, Nos. 4–6, April–June, 1893.

**Ornithologist** and Oölogist, XVIII, Nos. 3–5, March–May, 1893.

**Ottawa** Naturalist, VI, No. 11, VII, Nos. 1–3, March–June, 1893.

**Proceedings** Acad. Nat. Sci. Phila. 1893, pt. 1, Jan.–March.

**Records** of the Australian Museum, II, No. 4, Feb. 1893.

**Zoe**, III, No. 4, and IV, No. 1, Jan. and April, 1893.

**Zoölogist**, April–June, 1893.

## GENERAL NOTES.

**Notes on Cassin's Auklet.**—Some notes I made on *Ptychoramphus aleuticus* while on Santa Catalina Island, Cala., may be of interest to others. I arrived there March 15, and left April 3, 1893. For three or four days after my arrival the sea was rough and the birds appeared nearer shore than later in calm weather. The choppy waves made shooting difficult, and the birds were wild. During the better weather that followed the birds must have gone some miles out, for one day at least I saw none

in half a day's rowing. The first day's work was about the best, and of the five taken that day four were in good condition though none were fat. Later on all birds taken were thin, some being very thin, and five were found floating dead, three of which I saved. It would seem that those that remained until the end of the month were unable to migrate, either because of disease or old age. In one female taken March 23 some ova were as large as No. 10 shot. None of the other females taken showed any tendency toward breeding. Several birds taken show small irregular patches of white on the cheeks, probably signs of immaturity. The majority retained the old faded wing and tail feathers.

The flight of *P. aleuticus* is swift, steady, and low, just clearing the waves. The white under parts show in flight. They dive well, and can stay under water two minutes or more. They swim fast for so small a bird. On being chased with a boat they often preferred diving to flight, and then their speed was greater than when swimming, requiring sharp rowing to get within shooting distance. They often changed their course while under water, and several times baffled me in that way. They are so small that one cannot see them very far in rough water. Wounded birds observed at short distances were observed to use their wings in diving, and probably in all cases diving is simply a flight under water.

The last day that I was out I ran down two sick birds that I knocked over with an oar without having to shoot them, and another I caught alive without hurting it, but it died as I came ashore. March 30 I shot one at close range with dust shot, which revived after being thrown in the bottom of the boat, and I kept it alive one day. It was apparently unable to fly when first seen and was quite thin. I found on skinning it that a single pellet of dust shot had passed through the brain and stopped at the bone on the opposite side. Clots of blood were in the track of the shot through the brain. That a sick bird with a shot through the brain can live several days, shows that it is of low organism or has unusually great vitality. Its actions may not have been normal because of this wound in the brain. Its usual position was lying flat on its belly on the floor. On being stroked on its back, which it seemed to dislike, it rose, with the body at an angle similar to that of a duck walking, took a few steps very awkwardly, and fell flat on the floor again. The middle of the feet in walking were put down about under the outer outline of the body on either side, and the resulting waddle was greater than I have seen in any other species of bird. At each step the feet made a decided pat on the floor. On stroking it several times, it uttered a low, harsh, grating sound similar to what I heard a wounded one utter as I pursued it in the boat. If I teased it some time, it would bite my finger, but its bite was too weak to hurt at all. A few times it rose of its own accord and straightened up and flapped its wings, its body inclined at an angle of 45° or 50°, but at no time did it take the nearly erect position given in most plates of allied species. Probably, had it been unhurt and well, it would have stood more erect. The stomachs of some examined contained shrimps. One day while I was watching

from the boat some sea-lions lying on some rocks off shore, an Auklet swam around me some time, busily fishing for shrimps. For some it simply dipped its head under water, for others it dove a few inches. The fishermen spoke of this and the other small species of Auks and Guillemots as 'Farallones,' not seeming to distinguish between the various small species.—F. STEPHENS, *Witch Creek, Cala.*

**Behavior of a Sandhill Crane.**—While shooting near Madelia, Minnesota, one autumn day some years ago (Oct. 1 or 2, 1873), my companion, Mr. Horace Thompson of St. Paul, slightly wounded with a rifle ball at long range an immature Sandhill Crane (*Grus mexicana*) which with several others was resting on the prairie. At the report they all flew away except the wounded bird and one other which apparently was its parent. The wounded bird, after a number of unsuccessful attempts to fly (assisting itself by first running, accompanied by the parent which kept beside it), finally succeeded in rising some ten or fifteen feet from the ground, but it evidently could not long sustain itself in the air. The parent bird, perceiving this, deliberately placed itself *underneath* the wounded one, allowing it to rest its feet on her back, both birds flapping away all the while. In this position she actually succeeded in bearing it off before our eyes for quite a distance to a place of safety, where we would not follow it. It was one of the most touching examples of parental affection in a bird that has ever come under my observation.—GEORGE H. MACKAY, *Nantucket, Mass.*

**Ionornis martinica in Kansas** —A fine specimen of the Purple Gallinule (*Ionornis martinica*) was captured near Manhattan, Kansas, on April 14, 1893. The bird was killed by a farmer who struck it with a sunflower stalk. It is now in the possession of Dr. C. P. Blachly of this place. This is the first record of the occurrence of the Purple Gallinule in Kansas.—D. E. LANTZ, *Manhattan, Kansas.*

**Pseudogryphus californianus.**—Mr. Thomas Shooter, a well-known taxidermist of Los Angeles, has in his possession the mounted skin of a California Vulture shot near Rincon, California, about August 13, 1892. The specimen, though over four feet in length, appears to be an immature bird. Down fairly well covers the head and neck, excepting wide tracts below and back of the eyes and on the chin and lower throat. The greater coverts are narrowly bordered with rusty, as are a good many of the feathers on the back. The plumage generally is dull black. The horny part of upper mandible is horn-brown. The cere has dried a dull blackish brown.

About June, 1892, an adult California Vulture was brought to Mr. Shooter alive. It was captured by two men, one named Harris, about twenty-seven miles north of Santa Monica, and in the foothills near the line separating Los Angeles and Ventura Counties. Mr. Shooter says the

men saw this bird on the ground devouring the body of a wildcat which, when frightened away, it carried off in its claws. Shortly afterwards the bird was seen in a tree in the vicinty. A rope snare was rigged in the tree's top, and the bird captured, and brought alive to Mr. Shooter. It seemed at times to be troubled with a kind of asthma; which trouble seemed to increase, for it appeared to be a local complaint. A month later Mr. Shooter's assistant in trying, alone, to move this powerful bird from one cage to another, was severely bitten, and in trying to save a finger from being bitten off, broke the bird's neck. This bird's skin was mounted and is now at the Chicago exhibition.

In or about 1889, a bird of this species was captured near Puente, Los Angeles County, and was brought to Mr. Shooter. It was emaciated and dying when found.

During his thirteen years' residence in Los Angeles, Mr. Shooter remembers having seen but two other California Vultures. He considers them very rare; though recently a hunter has informed him that he knows of the whereabouts of two that keep in the mountains.—R. H. LAWRENCE, *Duarte, Cala.*

**Cathartes aura in Chenango County, New York.**—In the latter part of the summer of 1891 a Turkey Vulture was shot in the town of McDonough, New York, and was mounted by a young taxidermist of that place. At the time it was killed it was feeding on the carcase of a woodchuck.—HENRY C. HIGGINS, *Cincinnatus, New York.*

**Strix pratincola in New York.**—A fine female Barn Owl, now in my collection of mounted birds, was shot September 13, 1891, in the town of Pitcher, about three miles from this place.—HENRY C. HIGGINS, *Cincinnatus, New York.*

**Short-eared Owl Nesting on Plum Island, New York.**—While on a visit to Plum Island, on May 7, 1891, I noticed a Short-eared Owl circling over the beach grass on the southwest plain and, on my approach, showing unmistakable signs of anxiety. With the aid of my setter 'Jack' I soon flushed the female, and discovered the nest, which consisted of a slight hollow in the bare sand in a rather scattering growth of beach grass, with no attempt at concealment. It contained one young bird which, as near as I could judge, was about two weeks old, one rotten egg, and three meadow mice (*Arvicola*), minus their heads.

The old male circled around about fifty yards off, uttering cries which sounded very much like the squealing of young pigs. The female came much closer, and her cries reminded me of the barking of a young puppy. I searched the vicinity for more young, but failed to find any.—W. W. WORTHINGTON, *Shelter Island Heights, New York.*

**Xanthocephalus xanthocephalus and Spiza americana in Maine.** — A female *Xanthocephalus xanthocephalus* was collected by Mr. Fred. Rackliff, on Metinic Island, Knox Co., Maine, Aug. 17, 1882. The bird was discovered quite early in the forenoon in a piece of oats on the northeast part of the island, where it remained until a little after noon, when it was shot. The island lies about four miles southeast of the mainland of the town of St. George. The capture was effected directly after a 'fog mull' and light rain, but no heavy wind was experienced here. The bird was flushed several times before it was shot, but showed no disposition to leave the place. Mr. Rackliff mounted it for his collection. I believe this is the first instance of the bird's capture in Maine.

A young male *Spiza americana* was taken by Mr. Ralph H. Norton at Westbrook, Cumberland Co., Maine, Oct. 10, 1888. The bird was flushed from the rushes growing by a low field drain, and was in company with several species of Sparrows. The throat mark was indicated by a few black-centred feathers scattered over the upper throat. The skin is now in my collection. So far I have been unable to find any record of its occurrence in Maine. — ARTHUR H. NORTON, *Westbrook, Maine.*

**The Ipswich Sparrow** (*Ammodramus princeps*) **on the coast of Georgia.** —Mr. W. W. Worthington has very kindly given me permission to announce the occurrence of this Sparrow in Glynn County, on the coast of Georgia, where he took two specimens in January, 1890,—one on the 8th, the other on the 15th. I have examined both birds, and find them perfectly typical representatives of *A. princeps* which has not been previously recorded, I believe, from any point on the Atlantic Coast south of Cobb's Island, Virginia.—WILLIAM BREWSTER, *Cambridge, Mass.*

**A Hybrid Tanager.** — While in Omaha last fall for a few hours I called on Mr. Leonard Skow who called my attention to a Tanager in his collection that did not fit the keys. On my return to Washington I arranged to have the bird sent on for examination, and Mr. Ridgway pronounces it an unmistakable case of hybridism between *Pyranga rubra* and *P. erythromelas*—the first known instance of this phenomenon in the genus.

The bird is a male. Its bill is rather thicker than in *P. erythromelas*, but not so long as in *P. rubra*, with the median notch of the upper mandible well developed. The wings are rusty black, the primaries are edged with red on the outer web, while the secondaries and coverts are washed with brick red, giving the whole wing the appearance of having been brushed over with a water color of reddish yellow. The tail is marked in the same manner, but with more of the appearance of having been dipped in the red stain, as the whole web of each feather is tinged more deeply on the outer than on the inner web and at the base than at the tip. The body has the scarlet color of *P. erythromelas*, with no trace of the vermillion of *P. rubra*, though there is a little of the bronze of immaturity on the nape of the neck and on the belly. In a series of about thirty

specimens of *P. erythromelas* there is no trace of the reddish wash on the black—though several show red feathers among the black coverts. The characters of *P. erythromelas* are the stronger on the whole, as might be expected, as it seems the hardier bird of the two.

Measurements show that it is intermediate in size between the two species. I give a few (in inches), with those of Ridgway's 'Manual' for comparison.

| | Wing | Tail | Culmen |
|---|---|---|---|
| Hybrid | 3.90 | 2.85 | .60 |
| *P. rubra* | 3.55–3.95 (3.69) | 2.80–3.15 (2.99) | .82–.90 (.86) |
| *P. erythromelas* | 3.55–3.90 | 2.80–3.25 | .55–.60 |

The specimen is now in the collection of the U. S. National Museum —L. M. McCormick, *Washington, D. C.*

**The Summer Tanager in Connecticut.**—An adult male *Piranga rubra* was taken here April 28, 1893. The weather was quite cold at the time. Although in rather poor flesh, the bird shows no signs of ever having been caged.—Jno. H. Sage, *Portland, Conn.*

**Cape May Warbler at Shelter Island, New York.**—While collecting birds here on May 11, 1893, I secured a fine male Cape May Warbler. It was leisurely searching for insects in an oak grove on the very highest point on the island, and showed no alarm at my presence. It came in a 'bird wave' consisting of Warblers, Orioles, Chimney Swifts, Bobolinks, and Thrushes, which came on in numbers on that date or during the night previous.—W. W. Worthington, *Shelter Island Heights, New York.*

**Nesting Habits of Galeoscoptes carolinensis.**—This spring (1893) a pair of Catbirds (*Galeoscoptes carolinensis*) took it upon themselves to build a nest in a small but dense honeysuckle vine that runs over a wire netting under the very roof of the side veranda of my house. Not in the least daunted by either cats, children, or constant passers-by, they had evidently come to stay and rear a brood. It occurred to me that it might be a good opportunity to note the exact times of their egg-laying, and also the precise number of days included within the period of incubation. After the nest had been completed twenty-four hours the female deposited her first egg, and then laid three more, making four in all, upon the hours and days as set forth in the subjoined record.

| | | | | | | |
|---|---|---|---|---|---|---|
| First egg | laid | May | 11, | 1893, | at | 10.35 A. M. |
| Second " | " | " | 12, | " | " | 9.40 A. M. |
| Third " | " | " | 13, | " | " | 9.15 A. M. |
| Fourth " | " | " | 14, | " | " | 10.15 A. M. |

Now what interested me most here was the fact that she not only laid an egg regularly every morning, but that it was also laid at about the same hour. The earliest one deposited was at 9.15 A. M. and the latest at 10.35, a difference of only one hour and twenty minutes. We must observe, too, that eggs one and four, were laid later than eggs two and three.

For the first few days she sat upon them only at irregular intervals, and was often absent an hour or more, but this habit soon changed after that time, when she finally gave them her undivided attention. On May 25 there were no birds hatched at dark, but on the morning of the 26th three young were in the nest, and the fourth egg, yet unhatched. That is, hatching took place during the night of the 25th. The fourth egg was not hatched until the night of the 26th. Here it will be as well to note that the mother sat on the eggs from dark until daylight, and it is fair to presume that egg number one was among those constituting the first three hatched. But if this be so the first egg was fourteen days in hatching; the second (?) but thirteen days, and the third (?) but twelve days. Again presuming that egg number four was not hatched until the night of the 26th, it, too, was but twelve days before the embryo escaped from it. This is taking it for granted that the first three eggs laid were also the first three hatched; I had no means of assuring myself of this, as I feared if I marked the eggs in any way she might abandon them, and this part of the record would be lost altogether.

At 6.45 P. M. on June 5, all the birds left the nest together. No one was near it at the time, and there appeared to be no special disturbing cause. There was threatening weather, to be sure, and low rumbling thunder at the time, but no lightning nor loud reports. We were dining at that hour, and my first knowledge of their having left the nest was my attention being called to a young one near the open dining-room door, which led out on the veranda. All the young were easily made prisoners on the ground, and I consigned them to a comfortable cage, which I hung up under the roof close to the nest. Here the parents faithfully fed them through the cage wires until noon of June 8, at which time any one of them could fly fifty or sixty feet with considerable vigor. Fearing that something might happen to them in the cage, at the time just mentioned I took them all down to the lower end of my garden and let them go in the dense underbrush that was overshadowed by numbers of second growth oaks and other trees. The parents were overjoyed at their escape, and it is my hope that none of them fell prey to the many prowling cats about, two of which I had shot in their attempts to get them the last few days the birds remained in the nest. It is not often that the opportunity offers to make as exact notes of the times of egg-laying of birds as are here presented, and I can but trust that they may be of use to those who in the future may have similar chances to observe, and who may care to compare their observations with those of mine. — R. W. SHUFELDT, *Takoma, D. C.*

**Connecticut Notes.** — On May 6, 1893, while collecting in a small patch of woods on the outskirts of this city I shot an Audubon's Warbler from a flock of Yellow-rumps. The bird is a male in very high plumage, the yellow throat being conspicuous and the chest pure black. On May 8 I again visited the woods, and after shooting several Yellow-rumps, I procured another Audubon's, this time a female in dull plumage but with the throat very plainly yellow.

On the same day I procured an adult male Lawrence's Warbler, and on May 22 an adult male Brewster's Warbler.

May 31 I noticed a Lawrence's Warbler which I thought was breeding. On June 5 I again noticed the bird and shot it, and, after hunting some time, I finally flushed the female from her nest which, unfortunately,[1] contained six young birds. I had a very good chance to examine her as she was constantly within six or eight feet from me. The nest was in all respects precisely like that of the Blue-winged Warbler. The young birds were well feathered out, and several of them showed traces of black on the throat. — A. H. VERRILL, *New Haven, Conn.*

**Correction.**—A recent careful re-examination of the contour map of the U. S. Geological Survey discloses that my statement made on pages 41 and 42 or the January 'Auk' as to the elevation of Clearfield County, Pennsylvania, is not wholly correct, since there is a considerable area in the central and northeastern part of the County which is under 1500 feet, and some even below 1000 feet, while the section over 2000 feet in elevation is confined to the southern portion and does not extend into Indiana County as was originally stated.—W. E. CLYDE TODD, *Washington, D. C.*

**The Faunal Position of Lower California.**—In the last number of 'The Auk' Dr. J. A. Allen, writing of the faunal divisions of North America, quotes me as giving the peninsula of Lower California the rank of a 'subregion'—whatever that may mean. His exact words are: "The Sonoran Subprovince consists of Dr. Merriam's restricted 'Sonoran subregion,' with the addition of Lower California, which Dr. Merriam gave the rank of a 'subregion.'" (Auk, Vol. X, April 1893, p. 138). This statement is hard to understand in view of the circumstance that I took pains to point out, a year before the appearance of Dr. Allen's article, that Lower California was not entitled to the rank usually accorded it in faunal papers,[2] but should stand only as "a minor subdivision of the Lower Sonoran Zone." In this paper, which is several times quoted by Dr. Allen, I summed up the faunal results of a study of the mammals, birds, reptiles, and plants of the

[1] The really unfortunate part of the affair seems to have been not that the writer was disappointed in his hopes of a set of eggs, but that he failed to capture and rear the young and to secure the female, — that he threw away a rare opportunity of casting much light on the status of this doubtful species. — EDS.

[2] The way Lower California has been treated by writers on distribution I have summarized in Proc. Biol. Soc. of Washington, VII, April 1892, pp. 16–17.

peninsula, and stated: "The peninsula of Lower California is a subdivision of the arid Lower Sonoran Zone. Not a single genus of land mammal or bird is restricted to it, and but two peculiar species of mammals have been described. The peculiar birds are more numerous, but with few exceptions are only subspecifically separable from those of neighboring parts of the United States and Mexico . . . . Among reptiles, about 25 peculiar species of snakes and lizards are believed to be restricted to the peninsula, but no peculiar genus is known. Three of the genera are tropical, and nine are arid Lower Sonoran. In addition to the peculiar species and subspecies of the peninsula, many characteristic arid Lower Sonoran forms of mammals, birds, reptiles, insects, and plants abound. Among the latter may be mentioned the highly distinctive Sonoran desert brush, *Larrea mexicana* and *Krameria parvifolia* . . . . It is evident, however, that the peculiar fauna of the peninsula of Lower California entitles it to rank as a minor subdivision of the Lower Sonoran Zone. It is in effect an insular fauna of recent origin, bearing the same relation to that of the mainland as do several of the adjacent islands." (Presidential Address on the Geographic Distribution of Life in North America, Proc. Biol. Soc. Washington, Vol. VII, April 1892, pp. 29–30).

The case is simply this: Dr. Allen has quoted views expressed by me several years ago, before I had made a special study of the faunal position of Lower California, instead of my later views on the same subject, Parallel instances of the quotation of earlier instead of later conclusions occur in other places. — C. Hart Merriam, *Washington, D. C.*

[I trust it is needless for me to say that the misrepresentation implied above by Dr. Merriam was entirely unintentional and unconscious on my part. Accompanying the quotation given by Dr. Merriam is a footnote (not mentioned by him), as follows: "N. Am. Fauna, No. 3, 1890, p. 25, and map 5." This refers to a paragraph which begins as follows: "The *Sonoran Province*. . . . comes into the United States from the south and is divisible into six subregions, namely: (1) an *Arid* or *Sonoran* subregion proper, occupying the tableland of Mexico and reaching north into western Texas, New Mexico, Arizona, and southern California; (2) a *Californian* subregion, occupying the greater part of the State of that name; (3) a *Lower Californian* subregion; (4) a *Great Basin* subregion . . ."; and so on. Now as to "'subregion'—whatever that may mean";—on this apparently there can be no better authority than Dr. Merriam himself. I used it, in the passage in question, as a borrowed term, and to indicate this placed it between 'single quotes.' 'Subregion', as here used, is employed of course in a very different sense from 'subregion' as used by me in a technical sense. And Dr. Merriam, as I understand it, merely employed it in a *quasi*-technical sense to designate provisionally subdivisions of a minor grade.

In his later paper ('Presidential Address') Dr. Merriam says: "The Sonoran Region may be divided by temperature into two principal trans-

continental zones, (*a*) *Upper Sonoran*, and (*b*) *Lower Sonoran;* and each of these in turn may be subdivided into *arid* and *humid* divisions" (l. c., p. 27). Nothing is said here or elsewhere, so far as I have been able to discover, about 'subregions,' nor is there any definite allusion to the divisions of the 'Sonoran' previously announced, nor any definite clue given as to what extent that classification was intended to be abrogated or modified by the later paper. In fact, the later paper does not perhaps go sufficiently into details to make this distinctly requisite. At page 29 of the 'Address,' however, it is stated that "Lower California is a subdivision of the arid Lower Sonoran Zone"; and on page 30 that Lower California is entitled "to rank as a minor subdivision of the Lower Sonoran Zone." And this is all that I supposed was implied by the classification given in the previous paper (N. Am. Fauna, No. 3, p. 25).

My purpose in referring to and making use of Dr. Merriam's 'subregions' in defining my own areas was two-fold: *first* (as they had been already mapped and defined), to save trouble and space in writing out their boundaries; *second*, in order to make a direct comparison between them and my own, which for the most part merely differed in respect to nomenclature. In connection with the statistics given by me respecting the bird fauna of Lower California, I should have given, or at least made reference to, the much fuller statistics previously published by Dr. Merriam respecting the fauna and flora in general; the omission to do this was purely an oversight (partly due, however, to the necessity for condensation), which I sincerely regret, and I am glad to have Dr. Merriam give them their merited prominence in the present connection.

As Dr. Merriam has shown in his admirable historical summary of the treatment of Lower California by previous writers (Pres. Add., pp. 16, 17), many authors who have referred to it have recognized its low ratio of peculiar forms and its close relationship to the arid interior district designated by Dr. Merriam as 'Arid Lower Sonoran.'—J. A. ALLEN.]

## NOTES AND NEWS.

MR. JENNESS RICHARDSON, an Associate Member of the A. O. U., died at Bryn Mawr Park, Yonkers, N. Y., June 24, 1893, at the age of 36 years and 19 days, after a long and painful illness. Although Mr. Richardson has published little, he was an excellent field naturalist and collector, but was especially distinguished as one of the leading taxidermists of the modern school. He was born at Rutland, Vt., in 1857, where he spent his younger days, early developing a strong taste for natural history pursuits, and unusual skill as a taxidermist. He was for some years an assistant of Mr. W. T. Hornaday at the National Museum in Washington. In 1886 he left Washington for New York, and took the position of Chief

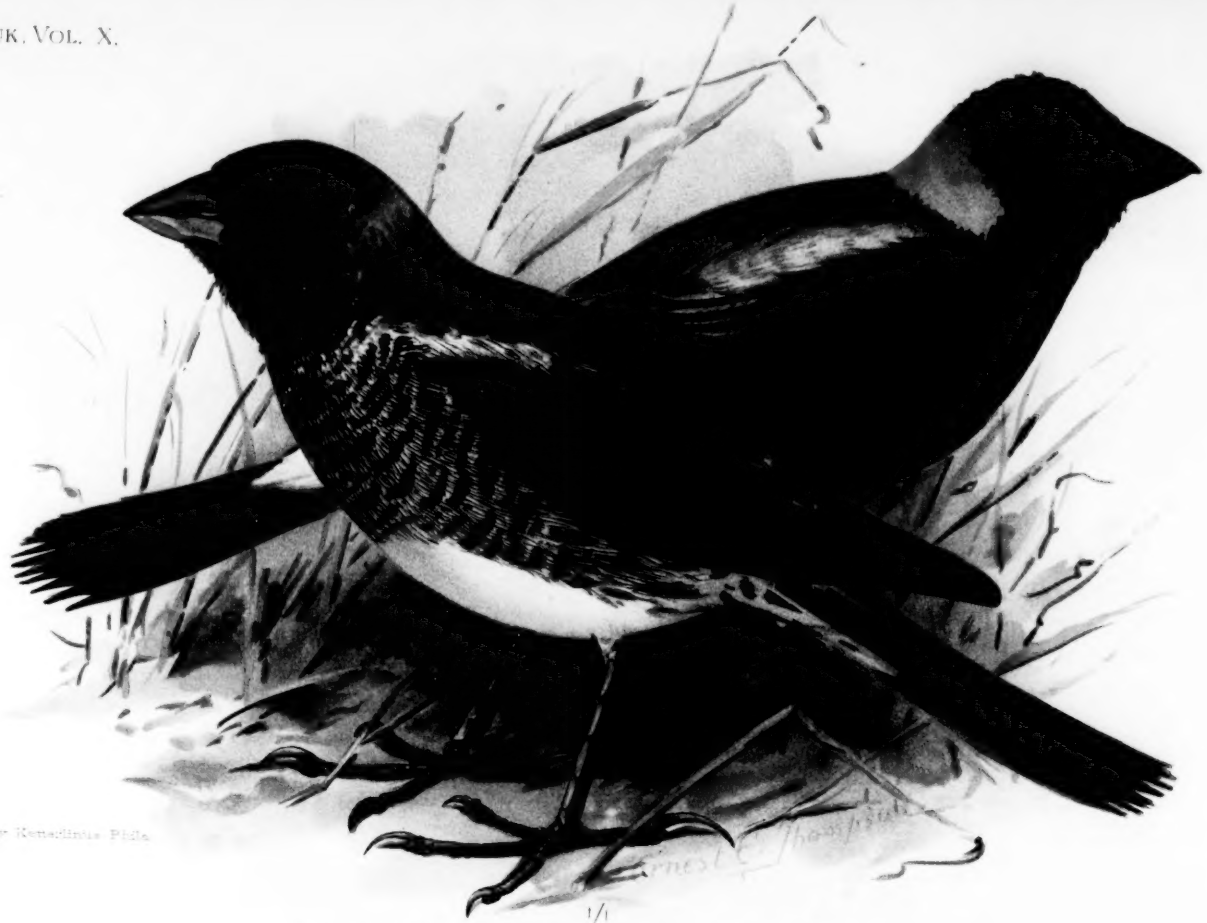
Taxidermist at the American Museum of Natural History. He built up and was at the head of the very efficient Department of Taxidermy at this institution until serious ill health compelled his retirement a few months since. The many fine pieces of taxidermy which he has superintended or personally executed, including some sixty groups of birds and mammals, will long remain a monument to his memory. His most noteworthy pieces are the Bison Group (18 x 30 feet), a Woodchuck Group, a Muskrat Group and an Opossum Group among mammals, and of the 54 bird groups perhaps the most striking and attractive are the Robin, Louisiana Waterthrush, Cliff Swallow, Mottled Owl, Ruffed Grouse, Florida Blue Heron, Wood Duck (see Auk, Vol. X, pl. ii), the Labrador Duck and the Laughing Gull. His groups were not only original and artistic in design, but were executed with the utmost care as to details, and mark an era in the history of taxidermy and in museum exhibits, at least for America, being anticipated in point of time only by the exhibits at the South Kensington Museum in England. They are probably unexcelled in realistic effect.

Mr. Richardson was a man of great energy, of high ambition, and amiable traits of character, and his death will prove not only a severe loss to his many friends, but to the art to which he was so enthusiastically devoted.

As announced in the last number of 'The Auk', the unveiling of the monument to the naturalist John James Audubon occured on the afternoon of April 20, with appropriate addresses by Prof. Thomas Egleston, in behalf of the New York Academy of Sciences and the Rev. Dr. Morgan Dix, in behalf of the Trinity Cemetery Corporation. In the evening at a commemorative meeting, held in the lecture hall of the American Museum of Natural History, an address on the life and scientific work of Audubon was delivered before a large audience by Mr. D. G. Elliot. A detailed account of the proceedings, together with a general history of the enterprise, will be shortly published in the 'Transactions' of the New York Academy of Sciences, including the addresses in full.

The first part of Prof. Alfred Newton's 'Dictionary of Birds,' long since announced as in preparation, has just appeared, forming an octavo volume of over 300 pages, with numerous illustrations. It is based upon the articles contributed by him to the ninth edition of the 'Encyclopædia Britannica,' but contains besides a large number of others by himself and Dr. Hans Gadow, together with contributions by Mr. R. Lydekker, Professor Roy and Dr. Shufeldt. The work is to consist of four parts, and when completed will form a demy 8vo volume of about 1000 pages, copiously illustrated. The Publishers, Messrs. Adam and Charles Black, promise Part II in October.

Mr. Frank M. Chapman, of the American Museum of Natural History, New York City, recently returned from his trip to the Island of Trinidad, bringing with him a large collection of birds and mammals, his trip having proved eminently successful and satisfactory. The scientific results will soon be published in the 'Bulletin' of the Museum.



1/1

BOBOLINK (DOLICHONYX ORYZIVORUS).